THE FLORA OF DELHI

Sorrip Lister
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Indian Botanic Garden, Howrah

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FOREWORD

When I joined the University of Delhi as Professor of Botany in March 1949, my first requirement was naturally a "Flora of Delhi". None was in existence and even Duthie's "Flora of the Upper Gangetic Plain" was out of print. This seriously hampered the teaching and learning of botany. In the department we also received frequent requests from Hakims, Vaidyas, tradesmen and foreign visitors to identify various specimens from time to time. I, therefore, tried to find a student who would take up this job earnestly. Dr J. K. Maheshwari, who had taken his M.Sc. degree in botany in 1953, offered himself for this work and the C.S.I.R. responded by sanctioning a scheme of research on this topic. J. K. Maheshwari worked with great industry and enthusiasm for a little over three years and finally prepared a manuscript which won him the Ph.D. degree of the University of Delhi in 1957.

During the last few years this manuscript has been further revised and improved and in 1962 it was given to the C.S.I.R. for publication in book form. At the time of writing this Foreword, it is already in the page proof stage and should soon see the light of the day.

Dr J. K. Maheshwari has spared no pains in making this work as complete as possible and has provided many field notes which are based on personal experience. He has also tried to keep pace with the many changes in nomenclature that have come about in recent years since the publication of Hooker's "Flora of British India".

The arrangement of families generally follows Bentham and Hooker's system. English and local names have been given wherever possible for the benefit of agriculturists and others and there are useful notes on the local uses of the plants.

In spite of the care which Dr J. K. Maheshwari has exercised in every way, there are bound to be some errors and omissions. Dr Maheshwari will appreciate having these brought to his notice by the users of the Flora.

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May 15, 1963

P. MAHESHWARI

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Grateful thanks are due to Shri M. B. Raizada, former Head of the Division of Forest Botany, Forest Research Institute, Dehra Dun, for the facilities provided to work in the F.R.I. herbarium and for help in identification of some specimens. I also place on record my sincere thanks and appreciation to Dr B. M. Johri, Reader in Botany, University of Delhi, late Shri A. Percy-Lancaster, former Director of Horticulture, Central Public Works Department, New Delhi; Sarvashri B. N. Sastri, K. Kashyapa, S. B. Deshaprabhu, and V. N. Chhibber of CSIR, New Delhi; the Director, Indian Meteorological Office, New Delhi; the Soil Conservation Officer Delhi; the Superintending Engineer, Western Jamuna Canal, Delhi; and to the authorities of the Royal Botanic Gardens, Kew, England, and of Rashtrapati Bhavan Gardens, New Delhi, for their help in various ways.

I am much obliged to the Council of Scientific & Industrial Research, New Delhi, for a grant towards this investigation.

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ABBREVIATIONS

For economy of space, the conventional abbreviations of some of the well known and more commonly cited books, periodicals, etc. have been further condensed as follows :

FBI	...	The Flora of British India by J. D. Hooker 7 vols., 1872-97. London.
FUGP.	...	Flora of the Upper Gangetic Plain and of the adjacent Siwalik and Sub-Himalayan Tracts by J. F. Duthie, 3 vols., 1903-29 (vol. 3, Pt. 3 by R. N. Parker ; index, 1952). Calcutta.
Gr.	...	A Catalogue of the Plants growing in Bombay and its vicinity by J. Graham, 1839. Bombay.
JASB.	...	Journal and Proceedings of the Asiatic Society of Bengal. Calcutta.
JBNHS.	...	Journal of the Bombay Natural History Society. Bombay.
JIBS.	...	Journal of Indian Botany, continued as Journal of the Indian Botanical Society. Madras.
JLS.	...	Journal of the Linnean Society (Botany). London.
Merr. Enum.	...	An Enumeration of Philippine Flowering Plants by E. D. Merrill, 4 vols., 1923-26. Manila.
Pflzch.	...	Das Pflanzenreich Regni Vegetabilis Conspectus, etc. by A. Engler, Hefte I-102, 1900-37. Leipzig.
RBSI.	...	Records of the Botanical Survey of India. Calcutta.
TLS.	...	Transactions of the Linnean Society of London (Botany). London.

Introduction

Although Delhi is the metropolitan seat of India, the flora of this State has remained practically unexplored. Delhi is visited by many Indians and foreigners, of whom several are interested in plants. Many of the plants in Indian floras do not possess scientific names which are considered valid in the light of the International Code of Botanical Nomenclature. Further, the identity of some plants has been found to differ from that mentioned in these floras. There is need, therefore, of a complete modern revision of the flora of this country. The present study was undertaken with this objective.

MAIN GEOGRAPHICAL FEATURES

Formerly a south-east division of the Punjab, Delhi State stretches along the western bank of the Jamuna River between 28°12'-28°53' N. and 76°50'-77°23' E. To the south-west lies the Thar desert which has always been a little too inhospitable to permit easy passage. To the north, at a not very far off distance, lie the lofty Himalayas. To the north-east lies the plain area on the Indo-Gangetic divide west of which are the plains of the Indus. Immediately to the south running in N.E.-S.W. direction is the Aravalli Range, the last tail end extension of which enters Delhi from Gurgaon; while to the east lie the fertile Gangetic plains. Delhi thus occupies a unique position in the form of a gateway between the Thar desert, Aravalli Range and the Himalayas. The tract is located in the north-west Indo-Gangetic alluvium, particularly the Jamuna alluvium. Considerable diversity of physical features occurs in the State. In fact the physical configuration of the country affected the routes in such a way that they tended to pass through this gateway, thus making Delhi the potential focus of routes from contrasting zones of physical environment. A branch of the Western Jamuna Canal (East Circle) drains through the district. The Western Jamuna Canal is the oldest irrigation system in the Punjab and takes off from the river Jamuna at Tajewala Head Works, about 241.4 km. from Delhi.

With the transfer of the metropolis from Calcutta to Delhi in 1912, a new minor province was created for administrative convenience covering an area of 1497 sq. km., out of which 1297 sq. km. are occupied by the Rural Area and the rest by Urban Area. Delhi State comprises a

long, narrow strip of territory along the Jamuna, which formed part of the Old Delhi district, and 65 trans-Jamuna villages, formerly in the Meerut district of Uttar Pradesh. The elevation of the State on the average ranges from 213-219 m. above sea level. The greatest length and breadth are 53 and 48 km. respectively. The area is bounded on the north by Karnal; on the east by the river Jamuna which separates it from the districts of Meerut and Bulandshahr in the Uttar Pradesh; on the south by Gurgaon and on the west by Rohtak.

New Delhi, about 8 km. from its centre to the south of Shahjehan's fort in Delhi, was first established in 1911 and occupies an area of 85 sq. km. It is situated on the great alluvial plain of the Jamuna sloping slightly from west to east. Radiating on all sides are broad, straight avenues with decorative trees and residential buildings with spacious lawns and pruned shrubbery. The main government buildings have been placed on the rock which is a spur of the main Delhi Ridge. Seen from the Ridge, the city appears to be surrounded by a dense grove of trees.

CLIMATE

Broadly speaking, the climate of Delhi is mainly influenced by its remote inland position and prevalence of air of continental character, which is characterized by extreme summer heat alternating with great winter cold. It is unfavourable for the growth of luxuriant vegetation. Only during the three monsoon months of July, August and September, oceanic air penetrates the country up to region of Delhi. The climate is of a semi-arid nature due to marked diurnal differences of temperature, high saturation deficit and moderately low rainfall. The desert area of Rajasthan to west and south-west and the Gangetic plains of Uttar Pradesh to east, across which the monsoon air travels and reaches Delhi, have their respective shares in affecting the climate of this region. Extreme dryness with an intensely hot summer and a cold winter are features which are associated with a sweep of air from a westerly or north-westerly direction, while the influx of air from the easterly or south-easterly direction usually causes increased humidity, cloudiness and precipitation.

The climate is markedly periodic and is characterized by a dry and increasingly hot season from March to June, a dry and cold winter from October to February and a warm, monsoon period from July to September. Corresponding to these, there are three distinct vegetational seasons. The climatic factors that appear to be of greatest importance are :

Rainfall
Temperature
Relative humidity
Wind

Thunder-storms, squalls, dust-storms, etc.
Hail-storms, fog, etc.

Rainfall. The arrival of the south-west monsoon in this part of India is regarded as a meteorological event of considerable importance. A study of this event revealed that the maximum number of occasions of onset of monsoon occurs in the first week of July and last week of June (Bhullar, 1952). The wettest period of the year is the last week of July, when the Najafgarh Drain and other ponds and puddles become filled with water. The normal annual rainfall at Delhi is 66.6 cm. of which nearly 80% is recorded during the period of three months from the middle of June to the middle of September. The remaining 20% of the annual rainfall seems to have slightly increased during recent years, as Hooker and Thomson (1855) gave the rainfall figure at Delhi as 54.6 cm. Considering the year as a whole, 90% of the days are rainless, the monthly distribution varying from the maximum number in October and November to the minimum number in July and August. The month of November is driest, during which only on one occasion in 3 years, a rainfall of 0.25 mm. was recorded at Delhi. The highest annual rainfall at Delhi was as high as 153 cm. in 1933, the next highest being 128 cm. recorded in 1862. The lowest annual rainfall was 20.6 cm. in 1868; other low amounts recorded being 29 cm. in 1928 and 26 cm. in 1929.

As a result of uncontrolled grazing and deforestation, rain has caused extensive soil erosion. Depressions and deep ravines have been formed on the hill slopes of Aravalli tail ends, near Mehrauli, in the Jamuna River basin and in the plains. Unless steps are soon taken to check the erosive action of rains, the gullies will encircle the fertile lands and render them unproductive.

Temperature. One of the most characteristic features of the climate of Delhi is the great extremes of temperature. The heat during the summer is intense and scorching, the temperature rising as high as 46°C. (June 19, 1939) during the month of June. On the other hand, the cold during the winter (December-February) is severe and the temperature goes down as low as −0.6°C. (January 1935). January is the coldest month of the year. In this month the mean maximum and mean minimum temperatures are lowest being 21.7° and 6.1°C. respectively. Moreover, in the rear of some of the winter disturbances, which traverse North India at this time of the year, the temperature sometimes reaches the freezing point. The month of February is slightly warmer and temperatures start rising by the middle of March. The hot season prevails during the period of April to June. The monthly mean temperature is highest in Delhi in June when the night temperature is also at its maximum, although the day temperature is highest in May.

Relative Humidity. Relative humidity is minimum in the dry weather months : April and May and maximum during the monsoon months : July, August and September. It is lowest in April-May and

[illegible] the highest [illegible] during late June and [illegible] July [illegible] with high humidity makes [illegible] The periods of high relative humidity are [illegible] but [illegible] high temperature and low humidity [illegible] make [illegible] Thus, with the increase of temperature humidity [illegible] and under such conditions xerophytic species of plants [illegible] are [illegible]

Wind. Wind is an important climatic factor for Delhi. For [illegible] of the year wind is mild with the mean velocity of 1.9-2 mps. Taking the year as a whole the prevailing direction of wind during September to May is west to north-west. While the percentage of winds with westerly components is quite large during the rest of the year easterly components predominate particularly during the months of active monsoon. Winds are strongest in June and lightest in November. In the summer months, hot and dust-raising winds popularly known as 'loo' are commonly experienced and may result in thunder-storms or dust-storms (andhi). The maximum velocity of wind that may be expected in Delhi State is about 31 mps.

Thunder-storms, Squalls, Dust-storms, etc. Thunder-storms form an important climatic feature of Delhi. They may occur at any time of the year, most favourite being the period between May and August. Some are associated with violent squalls, heavy rains and hail. Winds exceeding 9 mps, accompanied with rain or thundery conditions, are experienced six to seven times each month in July, August and September and on one or two occasions in February, March, May and June (Sinha & Sharma 1953).

About 70% of the squalls or violent winds occur during the hot season (April-June); their frequency reaches a maximum in May (Bhalotra 1954) and again decreases to almost nil in November. More than 70% of the squalls have peak speeds between 13 and 22 mps; 17-22 mps is the usual speed from March to July during which period most of the squalls occur. The severe squalls with peak speed of more than 22 mps are associated with dust-storms and (or) thunder storms. The highest wind velocity in association with dust-storms and thunder storms during

946-1950 was 3[illegible] mps recorded at 17 30 IST on May 20, 1950 ([illegible] & Sharma, 1953)

Dust-laden high winds or gale occur commonly during [illegible] the arid and semi-arid regions of the earth, such as parts of [illegible] Australia, Arabia, Persia and India. Mostly they [illegible] commencing within a few hours [illegible] the afternoon a few hours before the [illegible] by high temperature and low humidity [illegible] ing influence over the vegetation. The dust storms are [illegible] powerful squalls of short duration ranging from a few minutes [illegible] an hour or so, in which individual gusts may sometimes attain a [illegible] of 45 mps. At times the squalls may be so turbulent and the air [illegible] with dust that it brings about an Egyptian darkness irrespective of the hour of the day.

Hail-storms, Fog, etc. Hail-storms are rare in Delhi State. Taking the seasonal distribution they generally occur in January, February, April and May and to a lesser extent in March. Fogs are comparatively more frequent in the arid and semi-arid regions. In Delhi State they occur on one or two days in a month during December to February.

GEOLOGY

It is a known fact that the development and maturity of soils depend upon climate and geological formations. Since the composition and structure of the underlying rocks exercises a powerful influence on the growth of vegetation, a short account of the geology of rocks is presented below. The effect of rocks on surface vegetation is two-fold: (1) lithological and (2) structural. In the first case, the growth of vegetation at the surface is governed by the presence or absence of mineral elements in the rock. The second factor concerns the availability of mineral salts and water supply in a particular rock-bed depending on its position.

The Aravalli Range of Rajputana, the oldest mountain chain of India, came into existence at the close of the Dharwar era. The Aravallis themselves are now no more than the stumps of a once lofty range. They reach their maximum height at Mount Abu (1722 m.) in the south-west, sink to low hills in the Jodhpur-Jaipur Saddle and rise again to the north-east. The last spur of the Aravallis reaches as far as the Ridge of Delhi. A large part of the tract lies in the alluvium, but small hills and ridges consist of outliers of Alwar Quartzites Series belonging to the Delhi system of transition group of Peninsular India. The Delhi system, probably of lower Cuddapah age (Wadia, 1953), is endowed with a variety of excellent building materials particularly the red sandstone which was so widely chosen for the construction of beautiful monuments and historic

buildings. The system appears to be a locally specialized type of the [illegible] occupying a large extent of E. Rajputana country and extending from Delhi to Idar (Bombay State). It is composed of ferruginous and lime quartzites, gneiss and schistose rocks intruded by large masses of granite and amphibolites. The Delhi Quartzites possess a [illegible] and a study of specimens reveals quartz and their partials [illegible] as pyrites. They are found to contain 50% brown [illegible] besides appreciable quartzites of colourless mica and limonite. The schistose rocks consist of biotite schists, phyllites and impure [illegible] in and around Delhi rare occurrences of pegmatite [illegible] are noticed. These are coarse, incoherent and loose, consisting chiefly of quartz feldspar minor amounts of biotite mica and very small amounts of tourmaline. The reddish or brownish-red appearance of the hilly tracts may be due to a dehydrated form of iron oxide—turgite or haematite.

TOPOGRAPHY AND SOILS

There are four, well defined natural physiographic divisions of Delhi State, associated with which there are discrete aggregations of plants.

1. Khadar (Riverain zone)
2. Bangar (Area irrigated by wells and canals)
3. Dabar (Low-lying and rain-fed area)
4. Koh or Pahari (Hillsides)

The sources of the parent materials of Delhi soils are : (a) local quartzites, (b) river borne alluvium (N. Sen, 1952), and (c) alluvium of aeolian origin (A. Sen, 1945 ; N. Sen, 1952).

A popular general description categorises Delhi soils as sandy loam Jamuna alluvium. The villagers distinguish three kinds of soils according to their degree of consistency. They are referred to as Dakar, Raush and Bhur, which means a clayey loam, a half sand half clayey loam and a sandy loam tending towards sand respectively. The most prevalent type is Raush in all the four physiographic regions. In general, the soils are coarse in texture, low in organic matter and nitrogen status. They come under the world group of grey or brown soils of desert and semi-desert regions. Topography plays an important part in the distribution of Delhi soils. In low-lying areas both salinity and alkalinity develop in the profiles, otherwise the soils are fairly well supplied in plant nutrients except nitrogen.

The saline and alkaline soils known locally as Kallar, Reh, Shor or Usar are absent in the Kohi area, but frequent in Khadar, Bangar and Dabar areas. Their formation is favoured by a semi-arid climate, impervious subsoil and temporary abundance of humidity in soil with alternate, dry spell. In the dry season moisture evaporates from the surface

layers of the soil and in time there forms an [illegible] stances which the scanty rainfall is insuffi[illegible] solutions in the lower strata of soils [illegible] evaporation a whitish alkaline efflo[illegible] As the degree of salinity of the soil increases the [illegible] and the ground develops a lustrous appearance. The [illegible] chlorides, sulphates and carbonates of sodium [illegible] Apart from the direct injurious effects of an abnormal [illegible] of salts on plant life the presence of salts makes the soil very impervious to water, so that in years of good rainfall patches of Kallar are superimposed water-logged.

Khadar (Riverain Zone). It is a strip of land along the [illegible] Jamuna and bounded on the other three sides by the Grand Trunk Road (West), the Civil Lines (South) and the boundary of the State (North). It is a low-lying tract covering an area of 30562 hectares out of which only 38% is under cultivation. According to the District Gazetteer of Delhi (1883-1884), Khadar may be defined as soil which at some time or other lay either under the river or to the east of it. At what time and how the river changed its course is not known but it is believed that the change was quite well marked. The Jamuna riverain has wide sandy beds flanked by high banks and is subject to annual inundation. The river enters the State at a height of about 216 m and leaves it at about 192 m above sea level. The left bank of the river is used as a pasture ground and the right bank is liable to serious flooding. By a recurring deposit of the detritus and silt brought down by it from the Tertiary region of the outer Himalayas, the river raises its bed. However, during summer and winter months the river-bed in Delhi region is excavated and lot of silt is being removed annually.

The texture of the soil varies from coarse sand to clay and the clay content decreases with depth. The soils are base-saturated and their pH is on the alkaline side. They are low in organic matter most of which is confined to the top layers alone. Two important factors affecting crop yield in the area are high degree of salinity and water-logging. The soils belong to 'Solonchak' group (Raychaudhuri & Sankaram, 1952) and their position in the world group has been described as intrazonal, halomorphic, structureless and saline-alkali (Raychaudhuri & Tripathi, 1953).

Bangar (Area Irrigated by Wells and Canals). This is an area which in old times lay immediately to the west of river Jamuna. At present, the Western Jamuna Canal runs throughout its length and provides sufficient irrigation. The soils of Bangar are more fertile and productive than those of Khadar, being of a firmer consistency. Their texture is silty sand or loam. The erosion ratio of the soils is high showing a low resistance to erosion. In general, the pH of the surface and subsurface layers of this area is roundabout neutrality, though at some places it is

[illegible] Rich Soil [illegible] Kaman

Pahar Fan-shaped and Rain fed Areas. [illegible] flooded during rainy season. In [illegible] Ridge [illegible] The fertility of the soil in the area is [illegible] A considerable part of the soil is [illegible] but the soil [illegible] more compact. The NPK content of the soil is not adequate.

Koh or Pahari Hillsides. The area immediately south of Delhi, which include the Ridge Mehrauli Tughlaqabad, Fatehpur Beri, Deva Mandi and other neighbouring urbans, is rocky and undulating. This is a plateau known as Koh, consists mainly of bare [illegible] rocks. The area attains a height of 405.435 m above sea level or about [illegible] m above the alluvial plains of the Jamuna. Northwards, [illegible] gradually falls being only 7.5 m above the plains.

A prolongation of the Aravalli Hills enters Delhi from Gurgaon on its southern border and immediately expands into a rocky tableland about 5 km in breadth. It runs in a north-easterly direction nearly across the district. Ten miles south of the city the range divides into two halves. One of these branching halves turns sharply to the south-west and re-enters the borders of Gurgaon. The other form continues its northerly course as a low, narrow range of sandstones, passing west of New Delhi city where it forms the Delhi Ridge and finally terminates although [illegible] area in the right bank of the Jamuna River at Wazirabad [illegible] Delhi Ridge is now divided into two parts, the northern portion being in Old Delhi and the southern in New Delhi. The greater portion of the Reserved Forest is located in New Delhi, just opposite the Rashtrapati Bhavan at the back of the Birla Temple. The other wing is about [illegible] hectares extends from Sabzimandi to Khyber Pass passing along the University Road and opposite the Old Secretariat. Viewed from above, it appears to be a flat tableland, but when ascended, it proves to be quite very uneven, trenched by running ravines which are separated by lower ridges representing slightly harder beds. Between these projecting ribs of rocks, there is frequently a fair amount of dry, sandy soil supporting thin grass and sparse scrubby bushes. Cultivation is practised only in a few patches. The humus content of the soil is low due to the sparse vegetation. The lower depressions possess slightly richer soil due to accumulation of water in rains and the washing down of the upper strata.

PREVIOUS BOTANICAL EXPLORATIONS

John Forbes Royle (1799-1858), an English [illegible] was the [illegible] plant collector of Northern India and Himalayan Mountains. He had been [illegible] the Army in India and was already [illegible] Adding [illegible] when contact with A T Thomson [illegible] the pharmacologist, gave him so intense an interest in medicine [illegible] ham resolve on a medical career (Burkill, 195[illegible]). [illegible] as Curator of the new Botanical Garden at Saharanpur in 1823 and [illegible] his principal duties combined the duties of a Superintendent [illegible] Superintendent of the garden. The results of Royle's work were published [illegible] him after his retirement in Illustrations of the Botany and other branches of the Natural History of the Himalayan Mountains and of the Flora of Cashmere, a work in 2 quarto volumes and with 100 plates, issued in eleven parts between September 1833 and [illegible]. The [illegible] and dates of publication of different parts of his work have been [illegible] as W T Stearn (1954). [illegible] Royle's [illegible] the whereabouts of which had been unknown since [illegible] covered in Liverpool when the Liverpool Museum received a [illegible] whole of the contents of the museum [illegible] Asia [illegible] (Scarsfield, 1953, 1954, 195[illegible]). Besides Royle's publications, [illegible] his plants to the Linnean Society and a small set was [illegible] J D Hooker for examination and comparison [illegible] these plants are now housed at the Royal Botanic Gardens, Kew, England. J F Duthie in 1876 found some hundreds of Royle's plants at Saharanpur and these have been preserved at Dehra Dun. A perusal of Royle's Illustrations shows that he was [illegible] most valuable pioneer work [illegible] flora as an attempt to ascertain the geographical distribution of plants in relation to climate and elevation and their uses. Hooker f. and Thomson in the introductory essay to their Flora Indica commemorate Royle as the pioneer to establish a floral affinity between the vegetation of the eastern and western continents of the Old World. While on a botanical mission from Saharanpur to the Himalayan Mountains and Kashmir, Royle and his collectors spent a good deal of time in Delhi. Thus in front of 55 species of plants in his book there are comments like 'in the neighbourhood of Delhi', 'as far as Delhi', 'between Saharanpur and Delhi' etc.

In his book entitled 'Punjab Plants' (1869) J L Stewart, the late Conservator of Punjab Forests, gives the botanical and vernacular names and uses of economically important trees, shrubs and herbs occurring within the Province. He records 24 species of plants from or about Delhi district. However, this book has its importance more from a druggist's point of view.

J F Duthie (1845-1922), Superintendent of the Botanical Garden at Saharanpur, wrote 'Flora of the Upper Gangetic Plain and of the ad-

[illegible] Swahli and Sub H[illegible] [illegible] (Families Ra[illegible]unculaceae to Juncaceae) which appeared in 5 parts between 1903-1920. The families Primulaceae to Asclepiadaceae and Amaranthaceae were completed by him before his death in 1922, these and the rest up to Cyperaceae were published by R. N. Parker and W. B. [illegible]. Dutheie's Flora has been the most popular of being an important reference book for plants of the north Indian plains, although many of the plant names are not correct now according to the rules of the International Code of Botanical Nomenclature. At a number of places he mentions the occurrence of plants in or about Delhi, on the basis of collections made by himself or Royle, Jacquemont, Falconer, T. Thomson, Edgeworth, Vicary, Munro, C. B. Clarke, Jameson and others. However, the plants from Delhi State are not so well represented in this flora.

Recently M. B. Razada (1935-1936, 1950) has published some supplements to Duthie's Flora adding some new, noteworthy or recently introduced plants. In a paper entitled "Grasses of the Upper Gangetic Plain and some aspects of their ecology" Razada (1954) has enumerated 250 species of grasses belonging to about 100 genera.

R. N. Parker (1884-1958), Forest Botanist at F.R.I., Dehra Dun, published "A Forest Flora of the Punjab with Hazara and Delhi" in 1918. There he mentions 35 species of wild and cultivated plants occurring in the district of Delhi. In a paper entitled "Afforestation of the Ridge at Delhi" Parker (1920) enumerates a list of 67 species of wild and planted trees and shrubs found on the Ridge. In the light of present explorations the number of plants reported is far from complete.

Among recent plant explorers Singh, H. (1945), working in the Botany Division of I.A.R.I., New Delhi, made some collections of economic plants occurring in Delhi Province and published a list of them. S. K. Mukherjee (1953) has published a list of plants of the Delhi Ridge with a note on the floral elements.

Among other botanists who have paid occasional visits or collected plants while they lived in Delhi, the following deserve special mention: Dr H. Falconer (1808-1865), a palaeontologist and botanist, Superintendent of the Botanical Garden at Saharanpur; Major Vicary; M. P. Edgeworth (1812-1881), member of the Indian Civil Service and Commissioner for the settlement of the Punjab; W. Jameson (1815-1882), Superintendent of the Botanical Garden at Saharanpur in succession to Dr H. Falconer; Victor Jacquemont (1801-1832); G. T. Vigne (1801-1863), a British traveller; C. E. O. Kuntze (1843-1907) and W. R. Mustoe, Superintendent of Agri-Horticultural Operations, New Delhi.

PRESENT STUDY

Methods. The present work is based on the results of four years of intensive study of plants in Delhi State. The area covered has been deli-

m ted by the state boundaries, although the vegetation of the neighbou ing regions, now belonging to Uttar Pradesh and Punjab has a s been investigated to some extent.

For preparing an account of the different vegetation types found in Delhi State, excursions were undertaken twice a week during the first two years, 1953-1955 and later at least twice a month. The trips were arranged in such a way as to cover all the four topographical zones at regular intervals. As a result of this, it was possible to collect most of the plan in vegetative, flowering and fruiting stages. In the course of the day's excursion, plenty of observations were entered in a rough exercise book and specimens were collected. All the specimens so far collected have been given field numbers in a consecutive order and these numbers en tered simultaneously in the note-book give the field observations. The latter include the habit, habitat and height of the plant, subterranean organs, type of soil, colour of flowers, fruits and seeds, dimensions of leaves, flowers and fruits, scent of flowers, character of trunk and bark in the case of trees, associations, commonness and abundance of a particular species in the area and other peculiarities which cannot be described from pressed specimens. When the same plant was found in a different locality, new specimens were collected, pressed and numbered. An attempt was made in every case to identify the plants from fresh materials; those that could not be identified on the spot or in the laboratory were preserved for future study. Such of the undetermined plants were studied in the Forest Research Institute Herbarium at Dehra Dun.

Difficulties Encountered in Field Work. The area, especially the Ridge of Delhi, abounds in thorny trees and shrubs. At places they form impenetrable masses and thus render the exploration work difficult. Some plants, e.g. *Mucuna pruriti* Hook. locally known as Kaunch, possess fine, stiff bristles on the pods, which cause a very intense irritation on the skin and may thus become a nuisance. The fine bristles are often flying at spots near gardens and the local farmers and gardeners are well aware of this plant.

Snakes are met with on the Ridge as well as in the plains, often haunting the trees and shrubs. The period which immediately follows the rains up to October is the most unhealthy season in the year. During the hot summer months of May and June when temperature shoots up to 46°C and hot, dry, dust-laden high winds (loo) blow from the neighbouring Rajasthan deserts, botanizing becomes rather trying.

Herbarium Work. The dried specimens poisoned with a saturated solution of mercuric chloride in rectified spirit, were mounted on thick 40 × 25 cm. herbarium sheets. Small paper bags containing seeds and fruits were attached on the sheet. All such specimens were fully labeled on the right lower corner from the 'collector-book'. For further protection against future handling, a number of specimens were covered by cellophane paper.

DESCRIPTION OF THE VEGETATION TYPES

The Vegetation and Floristic Composition of the Ridge The Ridge of Delhi and its neighbouring hills [illegible] represent the [illegible] of the State which is a [illegible] secondary [illegible] formation known as rakhi or an arid open scrub-jungle. Such forests are widely distributed in the arid and semi-arid zones of India where the local annual rainfall ranges from 50-100 cm. The vegetation presents a very open appearance so that the trees and shrubs are widely spaced. The bulk of the vegetation consists of co-dominant spinous shrubs and trees, capable of great drought resistance. It may be classified under two categories as follows: (1) the permanent vegetation occurring throughout the year and (2) the temporary vegetation consisting of the annuals growing mainly during the short rainy season.

Corresponding to these, the vegetation of the Ridge presents two distinct seasonal aspects: (1) the summer and winter aspect when most of the trees and some of the shrubs flower and the soil is devoid of any ground cover. (2) the rainy season aspect when the vegetation is at its best and the soil which is otherwise bare between the trees and shrubs is covered by a vivid green carpet of temporary vegetation. The latter flower and fruit in a short time and disappear as soon as the surface layer of the soil dries up and winter sets in.

The permanent vegetation is xerophytic in character and shows various xeromorphic features such as a thick tomentum, succulence, dwarfed growth, coating of wax, thick cuticle, protected stomata, etc. The plants occur in open, clump formations with plenty of vacant spaces between trees and shrubs. Most of the woody species of the Ridge and those growing in similar arid regions regenerate vegetatively by throwing out root suckers and coppicing shoots and some propagate even by natural layering. Unless the stumps and roots are grubbed out, the thorny forest tends to maintain itself by producing root suckers and coppicing shoots. These features appear to be common in dry situations. The noteworthy examples are *Prosopis spicigera* Linn., *Acacia* spp., *Butea monosperma* Taub., *Bauhinia racemosa* Planch., *Grewia tenax* Fiori, *Capparis decidua* Edgew., *Zizyphus nummularia* W. & A., and *Anogeissus pendula* Edgew. The trees comprising the perennial vegetation of the Ridge are both indigenous and introduced. The former are represented chiefly by *Prosopis spicigera* Linn., *Acacia leucophloea* Willd., *A. modesta* Wall., *A. senegal* Willd., *A. arabica* Willd., *A. catechu* Willd., *Butea monosperma* Taub., *Anogeissus pendula* Edgew., *Salvadora persica* Linn., *S. oleoides* Decne., *Wrightia tinctoria* R. Br., *Cordia dichotoma* Forst. f., *C. rothii* Roem. & Schult., *Ehretia laevis* Roxb., *Tecomella undulata* Seem., *Zizyphus mauritiana* Lamk., and *Bauhinia racemosa* Planch. Among the latter, the most noteworthy example is *Prosopis juliflora* DC., an evergreen, spiny small tree native of the arid regions of Mexico and

[illegible] Central America. [illegible] It is very common on the Ridge and has become [illegible] native flora. Other successfully [illegible] Juss. whose self-sown seedlings are [illegible] occurring in a semi-wild state. [illegible] *aculeata* Linn., *Cassia fistula* Linn. [illegible] Boiv., *Crotaeva nurvala* Buch-Ham. [illegible] *Holoptelea integrifolia* Planch., and *Ficus* [illegible] the shrubs, *Jatropha gossypifolia* Linn. native of [illegible] *dillenii* Haw., native of S. America, have become [illegible]

The thorny shrubs occur in widely spaced clumps [illegible] of twiners and climbers. Of these *Capparis* [illegible] common and abundant, growing alone or associated with [illegible] *Securinega leucopyrus* Muell.-Arg. *Carissa* [illegible] *indica* Merr., *Maytenus senegalensis* Exel. *Clerodendrum* [illegible] F., and *Capparis decidua* Edgew. Other shrubs [illegible] associated patches include *Dichrostachys cinerea* Wt. & Arn. *Mimosa hamata* Willd. and *Diospyros cordifolia* Roxb. There are no [illegible] scrub forest because of adverse climate but few [illegible] as *Grewia villosa* Hook. f. & Thoms. and *Cordia rothii* R. Br. are known to occur on the [illegible] A very [illegible] and [illegible] undershrub *Adhatoda vasica* Nees, grows as a [illegible] *sepiaria* Linn. It flowers from December to March and adds [illegible] ter aspect of the Ridge. The [illegible] animal will eat it and hence it is [illegible] successful [illegible] the Ridge as well as on the barren hillocks of Aravali. Parbat, Kala Pahar and Mehrauli where only a few other plants grow. Other undershrubs which come [illegible] vigour and growth after the rains are *Indigofera [illegible]* Linn., *Justicia galena* DC., *Tephrosia purpurea* Pers., *T. [illegible]*, *Abutilon [illegible]* *Abelmoschus [illegible]* Linn. f., and *Ocimum americanum* Linn.

The Faridabad-Gurgaon hillocks are dominated by [illegible] *dula* Edgew., and *Butea monosperma* Lamk. although other trees and shrubs like *Acacia leucophloea* Willd. *Prosopis spicigera* Linn., *Grewia tenax* Fiori, *Bauhinia racemosa* Lamk., *Wrightia tinctoria* R. Br. and *Dalbergia sissoo* Roxb. are also common. In the interior areas near Sura, Kund, about 3 km. from Gurukul, Faridabad, *Butea monosperma* Lamk. forms a small forest of its own. It is easily denuded of its foliage by villagers. *Bauhinia racemosa* Lamk. is common on the Ridge near Kitchener Road, forming often a pure family of trees.

A marked change is induced by the monsoon when the Ridge wears a new cloak of green and the whole ground becomes carpeted with a variety of herbs which cover the surface with a vivid green. These plants complete their life history in three to four months after the rains. They help in increasing the humus content of the soil and extending the vegetation to barren areas. The commonest and most successful annuals belong

[illegible] the family [illegible] *Pedalium murex* [illegible] among them the most [illegible] are *Trianthema sphaerobiden* Jacq., *Cucumis melanus* [illegible] *Trianthema portulacastrum* [illegible] *Cleome viscosa* Linn., *Guanthema* [illegible] Merr. & Sherff [illegible] Less. *Aerva lanata* [illegible] Roth [illegible] DC. *Trichodesma amplexicaule* [illegible] Indian [illegible] annua Linn. [illegible] Nees [illegible] Don. *Barleria* [illegible] Linn. [illegible] Nees [illegible] *Barleria lupulina* Linn. *Phyllanthus fraternus* Webster [illegible] *Barleria lupulina* Linn. *Phyllanthus fraternus* Webster [illegible] *Commelina forskalii* Vahl [illegible] *C. benghalensis* [illegible] *C. triceps* Endl. *C. communis* [illegible] *C.* [illegible] Vahl. *Bremopsion strictus* [illegible] *Heliotropium* [illegible] Roem. & Schu. *Melanocenchris jacquemontii* Jaub. & Spach [illegible] *Scoparia dulcis* Linn. *Scoparia* [illegible] Beauv. [illegible] Schu. *Oldenlandia thomasii* Trim. *Fragosia* [illegible] Beauv. [illegible] Link. *Digitaria sanguinalis* Roth. *D.* [illegible] Heer. [illegible] *verticillata* Rottb. *E. compressa* Aschers. & Schweinf. [illegible] *dimidiatum* Stapf. *Brachiaria ramosa* Stapf. *Tetrapogon tenellus* [illegible] *Eragrostis decipiens* Beauv. [illegible] Linn. [illegible] Linn. [illegible] *Chrysopogon fulvus* [illegible] Beauv. Besides, a number of annual and perennial winter and others belonging to the *Convolvulaceae*, *Acanthaceae*, *Cucurbitaceae*, *Papilionaceae* and *Malvaceae* add to the rainy season aspect of the Ridge. Among the commoner are *Ipomoea pistoia* Sweet, *I.* [illegible] Jacq., *I. pes-caprae* Linn., *I.* [illegible] Roth, *I. [illegible]* Stapf, *Rivea hypocrateriformis* [illegible], *Trichosanthes cucumerina* Linn., *Coccinia cordifolia* Cogn., *M.* [illegible] *maderaspatana* Cogn., *Cayratia carnosa* Gagnep., *Rhynchosia* [illegible] DC., *Cryptolepis grandiflora* R. Br., *Pergularia daemia* Blatt. & Mot., *Teucrium polium* Crab. and *Pentatropis spiralis* Decne.

In areas where the soil consists of gravel or a thin [illegible] layer of soil over the rock, *Oldenlandia thomasii* Trim. forms a dense, tufted growth, in association with *Riccia* sp. and moss. At these places a pioneer plant community on the patent rock. As the soil dries up, *Riccia* sp. dies leaving black patches after which the grass is seen in a flourishing condition either alone or associated with *C. dentatus triceps* Endl., *Melanocenchris jacquemontii* Jaub. & Spach and others. *Sesamum indicum* Linn., cultivated in the plains for its oil, has become naturalized on the Ridge along roadsides and amongst the thorny bushes and shrubs, but the seeds produced are much harder than those of the cultivated types. Amongst introduced weeds *Martinia annua* Linn. and *Xanthium strumarium* Linn. thrive commonly in depressed areas or more often along roadsides and paths. *Elytraria acaulis* Lindau, a scapigerous rosette-leaved herb, grows commonly on the Ridge and adjacent hilly tracts

in open places and shades of bushes [illegible] Another member of the same family [illegible] was [illegible] scrub [illegible] recently [illegible] and [illegible] reported [illegible] on [illegible] edges of walls, [illegible] [illegible] A [illegible] cotyledonous annuals *Commelina* [illegible] was [illegible] a new record from the north Indian plain [illegible] and grows alone or associated with [illegible] [illegible] are elegant herbs with [illegible] flowers [illegible] perennial [illegible] referred as the 'rainy season' [illegible] by the flowers during the summer appear. Many [illegible] plants dry up on exposed situations but [illegible] and shades of trees, where the top soil is moist [illegible] there are also [illegible] perennial weeds which [illegible] the year, e.g. *Calotropis procera* R. Br., [illegible] *Abutilon indicum* Sweet, and others. Among parasites [illegible] *Dendrophthoe falcata* Ettings., a woody type flowering during the winter months, [illegible] only one known from the Ridge on *Acacia leucophloea* Willd., *Ficus tsiatica* Roxb., and *Dalbergia sissoo* Roxb.

Among recent introductions on the alluvial, sandy and [illegible] the Ridge, the following deserve mention: *Phyla nodiflora* Greene, *Alternanthera sessilis* DC., *A. pungens* H. B. & K., *Chenopodium ambrosioides* Linn., *Fagonia cretica* Linn., *Erigeron bonariensis* Linn., *Cuthanus oxyacantha* Bieb., *Nicotiana plumbaginifolia* Viv., *Finlaysonia dichotoma* Vahl.

Biotic Interference and Degeneration of the Forest. In order to understand the present condition of the vegetation and to form some idea of the status of different communities, it is necessary to consider the existing vegetation in the light of the history of Delhi State. This site was first marked by the legendary city of Indraprastha, which is supposed to have flourished in the fifteenth century B.C., though it might have been there even earlier. Since then it has been a seat of considerable importance for many centuries. There have always been alien intrusions from the north-western side of the country and the newcomers, like the old, very sensed very well that the control of this nodal point was the key to the control of the country. They naturally strove to establish themselves at this gateway before they could assert their authority over the country.

It is probable that in the past the area immediately outside the city walls of Delhi was very different from the vegetational standpoint than what it is today. The present vegetation of the place reflects its shadow in the foreground and full of raging powers and decisive battles fought on its soil. So pronounced are its repercussions that the so-called 'dry scrub forest' is characterized by 'economically unsound' species of plants. As the original plant cover on the hills as well as in the plains had been

[illegible] the vegetation continuously [illegible] regarded [illegible] As stated by Champion [illegible] climax created by the subsidiary edaphic [illegible] type [illegible] *pendula* [illegible] local [illegible] *pendula* [illegible] and *Acacia senegal* [illegible] *pendula* [illegible] was [illegible] New Delhi Ridge [illegible] the Rashtrapati [illegible] much [illegible] Old Delhi Ridge [illegible] rare on the northern [illegible] Faridabad, it is reduced [illegible] interference [illegible] real danger of the extermination [illegible] species, viz. *Decaschistia crotonifolia* Wt. & Arn., [illegible] Linn. and *Melhania futteyporensis* Munro collected by [illegible] be seen any longer. Presumably they have disappeared [illegible] very rarely. Similarly Parker [illegible] mentions [illegible] like *Melhania futteyporensis* Munro, *Grewia* [illegible] Juss., [illegible] Roxb., *Boswellia serrata* Roxb., *Rhus mysurensis* Heyne, [illegible] Willd. and *Euphorbia* [illegible] Buch.-Ham., which are now found commonly in Rajputana, are not found on the Ridge though they [illegible] once occurred." Three of these, namely *Grewia* [illegible] Juss., *Rhus mysurensis* Heyne and *Acacia catechu* Willd. have been collected from the Ridge by me, although in isolated patches. Similarly [illegible] Wt. & Arn., *Mimosa hamata* Willd., and *Flacourtia indica* Merr., all characteristic of an arid, scrub forest, occur only in [illegible] patches on the southern or New Delhi Ridge. These plants do not seem to spread to other parts of the forest. The Ridge has been cut down in several places for erecting buildings and is now inhabited. In view of this prolonged cutting and grazing to which the Ridge has been subjected, it is desirable to make a State park and sanctuary in which the native flora can be preserved.

Seasonal Vegetation. This includes those herbs and shrubs as well as weeds that are commonly met with in lawns, gardens, fields and unused ground. Corresponding to the three distinct seasons of the year, one comes across winter, rainy and summer season annuals that complete their [illegible] within three to four months. The optimum temperature and moisture conditions for plant growth are obtained during the rainy season when the vegetation attains a luxuriant monsoon aspect. Following the first fall of rains towards the end of June or early July, the almost

[illegible]

[illegible] variety of plants belonging [illegible]

[illegible]

[illegible] *C. aestuans* Linn.
C. trifolia Linn.
[illegible] Linn.
Tribulus terrestris Linn.
[illegible] *medicaginea* var. [illegible]
[illegible] Hook. f.
Polycarpaea corymbosa Lamk.
Convolvulus arvensis Linn.
Catharanthus pusillus G. Don
Solanum surattense Burm. f.
Justicia diffusa Willd.
Leucas cephalotes Spreng.
L. aspera Spreng.
Borreria hispida K. Schum.
Euphorbia hypericifolia Linn.
Croton bonplandianum Baill.
Phyllanthus fraternus Webster
[illegible]
[illegible]
C. bengalense Linn.
Bulbostylis barbata [illegible]
Perotis indica Kuntze
[illegible]
C. cohorta Linn.
Ammania baccifera Linn.
Flueggea virosa Roxb.
Dactyloctenium aegyptium Beauv.
Eragrostis poaeoides Beauv.
E. tenella Link
E. pilosa Beauv.
E. ciliaris Link
E. minor Roem. & Schult.
Digitaria setigera Roth
Sporobolus diander Beauv.
Desmostachya bipinnata Stapf
Celosia argentea Linn.

Among the rainy season annuals which are met in waste places, lawns and parks and along roadsides, the following deserve mention:

Indigofera linifolia Retz.
I. enneaphylla Linn.
I. hochstetteri Baker
Tephrosia strigosa Santapau & Mahesh
Zornia diphylla Pers.
Alysicarpus monilifer DC.
A. vaginalis DC.
Desmodium triflorum DC.
Polygala erioptera DC.
Cassia occidentalis Linn.
C. tora Linn.
Mollugo cerviana Ser.
M. nudicaulis Lamk.
Polygonum plebeium R. Br.
Imperata cylindrica Beauv.

[illegible] prostrata Nees, occurs commonly in the shades of hedgerows of gardens and neighbouring unused areas. [illegible] in the hedges [illegible] climbing over the bushes. Besides, a number of [illegible] the trees and shrubs of gardens, lawns and hedges. The [illegible] are:

C[illegible] Cogn. *Rhynchosia minima* DC.
Melothria maderaspatana Cogn. *Merremia* [illegible]
Trichosanthes cucumerina Linn. *Pergularia* [illegible] Bl. & McC.
Coccinia cordifolia Cogn. *Leptadenia* [illegible] W. & Arn.
Cardiospermum halicacabum Linn.

The rainy season vegetation disappears during the months of October with the same rapidity as it came during the rains. As the cold season ensues and temperature becomes low and the soil as well as atmosphere become dry, species of colder and moderately elevated regions or of cosmopolitan genera make their appearance. The common ones are:

Fumaria indica Pugsley
Coronopus didymus Sm.
Sisymbrium irio Linn.
Argemone mexicana Linn.
Vaccaria pyramidata Medik.
Stellaria media Vill.
Spergula arvensis Linn.
Melilotus alba Desr.
M. indica All.
Lathyrus aphaca Linn.
L. sativus Linn.
Medicago denticulata Willd.
Trigonella corniculata Linn.
T. incisa Benth.
Vicia hirsuta S. F. Gray
V. sativa Linn.
Sonchus arvensis Linn.
S. oleraceus Linn.
Launaea asplenifolia Hook. f.
Gnaphalium indicum Linn.
Cirsium arvense Scop.
Vernonia cinerea Less.

[illegible] *indica* DC.
C[illegible] Wall.
Bergia ammannioides Roxb.
Malva parviflora Linn.
Oxalis corniculata Linn.
O. martiana Zucc.
O. latifolia H. B. & K.
P[illegible] *supina* Linn.
Anagallis arvensis Linn. subsp. *arvensis*
Veronica anagallis-aquatica Linn.
V. agrestis Linn.
Mazus japonicus Kuntze
Salvia plebeia R. Br.
Rungia repens Nees
R. pectinata Nees
Rumex dentatus Linn.
Asphodelus tenuifolius Cav.
Lolium temulentum Linn.
Phalaris minor Retz.
Poa annua Linn.
Polypogon monspeliensis Desf.

As the weather warms up in March, seeds of several annual herbs and weeds, that lie dormant in soil throughout the rainy season and winter, now germinate and they successfully occupy the unused ground, lawns

[illegible] these weeds grow abundantly and [illegible] [illegible] [illegible]

[illegible]

Due [illegible] content and these models [illegible] following plant [illegible] R[illegible]'s time (1939) but have [illegible]

Ranunculus aquatilis Linn [illegible]
Polygala telephioides Willd. [illegible]
Aniseschilus cornutus W[illegible]

Flora of Ponds, Lakes, Marshes, Canals and its Neighbourhood [illegible] common habitats of the hydrophytes in the area [illegible] garh, temporary ponds near Shahdara, natural and artificial [illegible] lakes and deserted wells, "Barris" and dirty water pools. The Najafgarh Drain and the distributaries of H[illegible] R[illegible] ponds near Shahdara dry up [illegible]

The Najafgarh Drain supports a [illegible] plant associations are recognizable.

1. **Submerged aquatic association** : *Chara* sp., *Nitella* sp., *Potamogeton crispus* Linn., *P. pectinatus* Linn., *Hydrilla verticillata* R. [illegible] *Vallisneria spiralis* Linn., *Zannichellia palustris* Linn. and [illegible] *demersum* Linn. These species grow at different depths, mostly rooted in the muddy or sandy bottom and forming [illegible] masses of vegetation.

2. **Attached floating aquatic association** : *Marsilea* [illegible] Linn. *Nymphaea nouchali* Burm. f., *Potamogeton indicus* Roxb. *Jussiaea repens* Linn., and such amphibious herbs as *Ipomoea* [illegible] *Monochoria* sp. (*vaginalis* Presl ?), and *Sagittaria* [illegible] H. B. & K. All these plants are rooted in the mud.

3. **Free-floating aquatic association** : This [illegible] presented by a gae like *Spirogyra* sp. ferns like *Azolla pinnata* R. [illegible] and angiosperms like *Lemna paucicostata* Hegel. *Spirodela polyrhiza* Schleid. *Wolffia* sp. *Trapa bispinosa* Roxb. *Utricularia* [illegible] *inflexa* Cl. [illegible] *flexuosa* Vahl, and *Eichhornia crassipes* Solms. [illegible] are met during the months of September, October and November.

[illegible]

[illegible] Hook f. *Kochia indica* Wt. [illegible] Nash [illegible] *panicoides* var. *pubescens* Bor, and *Sporobolus diandrus* Br. [illegible]

The important crops grown along the canal belong to the Khar[illegible]

Pennisetum typhoides Stapf & C. E. Hubb.
Sorghum vulgare Pers.
Zea mays Linn.
Oryza sativa Linn.
Sesamum indicum Linn.
Crotalaria juncea Linn.
Cyamopsis tetragonoloba Taub.

Ruderal Formations. To this category belong different classes of plants which in one way or other owe their presence in the region to certain changes brought about by man, as in the preparation of areas for planting crops and deforestation. Wherever the forests have been destroyed in connection with agricultural activities leading to open lands a mixed flora made up of weeds and weeds plus [illegible] This characteristic ruderal flora occurs in open places where the soil is disturbed from time to time, in fallow fields, along tracks and roads, waste places in and near settlements, old garden sites and cultivated lands. All such man-made habitats are very susceptible to invasion of a weed flora [illegible] quickly occupies such areas unless they are properly cared for.

1. ROADSIDE WEEDS.—The following are the common species met preferably along roadsides.

Xanthium strumarium Linn.
Fagoron bonariensis Linn.
Laggera aurita Sch.-Bip.
Blumea lacera DC.
Carthamus oxyacantha Bieb.
Crotalaria medicaginea Lamk.
Cassia tora Linn.
Solanum surattense Burm. f.
Chenopodium ambrosioides Linn.
Cannabis sativa Linn.
Amaranthus spinosus Linn.
Euphorbia prostrata Ait.

[illegible]

[illegible] *Ageratum conyzoides* Linn.

[illegible]

[illegible] Abrus [illegible] Amaranthus [illegible] Being [illegible] them belong to the [illegible] weeds which are [illegible] dissemination by wind [illegible] equipped or [illegible] spread mode [illegible] The discovery [illegible] goes quickly [illegible] herbs affecting crop growth [illegible] weed [illegible] is a promising step in check [illegible] of weedy species [illegible] The families *Amaranthaceae* *C. perennis* *Malvaceae* *Convolvulaceae* *Caryophyllaceae* *Euphorbiaceae* *Tiliaceae* *Solanaceae* *Rubiaceae* *Boraginaceae* *Labiatae* *Scrophulariaceae* *Acanthaceae* and *Apocynaceae* are [illegible] *Compositae* *Capparidaceae* are doubly rich in weeds.

The typical weeds associated with the rainy season (Kharif) crops are listed below

Digera alternifolia Aschers.
Celosia argentea Linn.
Lemeus cephalotes Spreng.
L. urticaefolia R. Br.
Crotalaria medicaginea Lamk
Rhynchosia capitata DC
Aeschynomene indica Linn.
Oldenlandia corymbosa Linn.
O. aspera DC
Borreria hispida K. Schum.
Trianthema portulacastrum Linn.
Gisekia pharnaceoides Linn
Mollugo cerviana Ser
Artemisia scoparia Waldst & Kit
Solanum surattense Burm f
Portulaca oleracea Linn
Convolvulus arvensis Linn.
Bulbostylis barbata C.B.
Eleusine verticillata Roxb
Sporobolus diander Beauv
Cleome viscosa Linn
Gynandropsis gynandra Brig
Triumfetta rhomboidea Jacq
Corchorus aestuans Linn
C. trilocularis Linn
C. tridens Linn
C. olitorius Linn
Catharanthus pusillus G. Don
Perscarpaea corymbosa Lamk
Jussiaea diffusa Willd
Heliotropium strigosum Willd
Phyllanthus simplex Retz
P. fraternus Webster
Euphorbia hypericifolia Linn
E. dracunculoides Lamk.
Commelina forskalii Vahl
C. benghalensis Linn.
Cyperus iria Linn.
Echinochloa crusgalli Beauv
Aristida adscensionis Linn
Sorghum halepense Pers

The common weeds associated with cold season (Rabi) crops are as follows

Fumaria indica Pugsley
Coronopus didymus Sm.
Lepidium sativum Linn.
Vaccaria pyramidata Medik.
Stellaria media Vill.
Malva parviflora Linn.
Melilotus alba Desr.
M. indica All.
Vicia hirsuta S. F. Gray
V. sativa Linn.
Lathyrus aphaca Linn.
Lathyrus sativus Linn.
Oxalis corniculata L.
Amaranthus viridis Linn.
A. spinosus Linn.
Anagallis arvensis Linn. var. *arvensis*
Antirrhinum orontium L.
Asphodelus tenuifolius Cav.
Phalaris minor Retz.
Polypogon monspeliensis Desf.
Lolium temulentum Linn.

(b) WEEDS OF PADDY FIELDS. These are species that naturally [illegible] in wet or marshy areas subject to periodic flooding. A number of these are very troublesome [illegible] and hence frequently have [illegible] by [illegible] the commoner ones are

Ammannia senegalensis Lamk.
A. baccifera Linn.
Aeschynomene indica Linn.
Sesbania bispinosa Fawcett & Rendle
Vicia hirsuta S. F. Gray
Jussiaea perennis Brenan
Sphenoclea zeylanica Gaertn.
Monochoria sp. (*agua* Presl ?)
Sagittaria guayanensis H. B. & K.
Scirpus tuberosus Desf.
Echinochloa crus-galli Beauv.
E. colonum Link
Heteranthera compressa R. Br.
Paspalum distichum Linn.
Hydrolea zeylanica Vahl

Glossostigma spathulatum Arn., the smallest member of the family *Scrophulariaceae*, occurs on wet, muddy soil of the canal bank as well as in paddy fields.

4. ESCAPES. A number of plants originally under cultivation in gardens and fields for food, fibre, vegetable or ornamental purposes are frequently met in ruderal areas, along canal banks and roadsides. Of these, several members of the *Cucurbitaceae* are notorious in establishing themselves as escapes in waste places and along roadsides and [illegible] without being further cared for.

The following plants cultivated for vegetable, fibre or oil crops are often met as escapes

Lycopersicon esculentum Mill.
Anethum graveolens Linn.
Coriandrum sativum Linn.
Spinacia oleracea Linn.
Crotalaria juncea Linn.
Sesamum indicum Linn.
Trichosanthes dioica Roxb.
Luffa cylindrica Roem.
Cucumis melo Linn.
C. melo var. *utilissimus* Duthie & Fuller

Among the [illegible]

Ruellia tuberosa [illegible]
Cordia myxa [illegible]
Cordia rothii [illegible]
Ipomoea pes-tigridis H. B. & K.
Barleria cristata Linn.
[illegible] *Ipomoea* Roxb.
Chloris ionantha [illegible]
Althaea rosea Cav.

Some [illegible] in the old walled [illegible] Candler saline and alkaline patches [illegible] in the Khadar, Bangar and Dabar tracts. The [illegible] in the rainy season and into the deserts [illegible] are equally unfavourable to the native as well [illegible] including exceptions [illegible] which *Suaeda fruticosa* Forsk. [illegible] and Dandy [illegible] preferably the [illegible] accompanied by the grass *Sporobolus* [illegible] them. *Suaeda fruticosa* Forsk. is the most [illegible] on such soils forming a matted [illegible] vegetation. These plants are [illegible] lands that they can well serve as [illegible] plants were also observed in [illegible] less saline and alkaline [illegible]

Kochia indica Wt.
Chenopodium album Linn.
Atriplex pseudocampanulata Dess.
Polygonum plebeium R. Br.
[illegible]
Indigofera tinctoria Hole
Solanum surattense Burm.
Echinops echinatus Roxb.
Phyla nodiflora Greene

2. FLORA OF OLD WALLS, ANCIENT MONUMENTS AND ROCKY [illegible] OR FISSURES.—Inhabiting the outer old, semi-demolished walls of [illegible] buildings and monuments near Nizamuddin, Mehrauli, Qutab and Lodhi [illegible] as well as on the city walls, here is well recognizable a wild assemblage [illegible] tion principally of *Aerva sanguinolenta* Janchen, *Lindenbergia indica* Kuntze, *Boerhavia diffusa* Linn., *Corchorus depressus* Stocks, *Euphorbia hirta* Linn., *E. prostrata* Ait., *Leptadenia pyrotechnica* Decne., *Tephrosia purpurea* Linn., *Tephrosia villosa* Santapau & Mahesh and seedlings [illegible]

[illegible]

[illegible]
Cassia pumila Lamk
[illegible]
[illegible]
[illegible]
[illegible] Wild
[illegible]
Boerhaavia diffusa Linn

[illegible]
[illegible] Linn
Phyllanthus [illegible] R
[illegible] Ind
[illegible] Rosc
[illegible]
[illegible] Linn
[illegible] Cha

A number of plants grow in [illegible] the rocks [illegible] near canals in the 'Kachha' stairs leading [illegible] and [illegible] near settlements etc

Youngia japonica DC. subsp. *japonica*
Vernonia cinerea Less
Convolvulus pluricaulis Choisy
Solanum nigrum Linn
Lindenbergia indica Kuntze
Cleome viscosa Vah
Chenopodium album Linn
Euphorbia prostrata Ait
Phyllanthus fraternus Webster
Ficus religiosa Linn
F. benghalensis Linn

CULTURAL PLANT COMMUNITIES

Food Crops. The total land of Delhi State is 148032 hectares, of which 91227 hectares were sown during the year 1954-1955. Of the uncultivated area, 31922 hectares were not available for cultivation, 18458 hectares were other uncultivated land and 4837 hectares were fallow lands for the year 1954-1955. The cultivation of the crops is determined by climate, soil and water facilities. Crops like rice that [illegible] water are grown in a very small area, but dry or rain fed crops like [illegible]

[illegible]

[illegible] The irrigated [illegible] are [illegible] and [illegible] in a larger area. The irrigated [illegible] are [illegible] by [illegible] Delta [illegible] of Western Jamuna Canal (Eastern [illegible]). The agriculture [illegible] of the State includes [illegible] a complete season [illegible] agriculture [illegible] of the State includes [illegible] a complete season [illegible] Kharif or [illegible] season when a climate of tropical character dev[illegible] [illegible] crops are often grown [illegible] several edible [illegible] crops [illegible] the important ones are

Pennisetum typhoides Stapf & C. E. Hubb. (Pearl or bulrush or bajra millet)
Zea mays Linn. (Maize, Indian corn)
Sorghum vulgare Pers. (Great millet, Jowar)
Oryza sativa Linn. (Rice)
Gossypium herbaceum Linn. (Cotton)
G. arboreum Linn.
G. hirsutum Linn.
Hibiscus cannabinus Linn. (Roselle hemp)
Abelmoschus esculentus Moench (Lady's finger)
Crotalaria juncea Linn. (Sun hemp)
Cyamopsis tetragonoloba Taub. (Guar)
Phaseolus aconitifolius Jacq. (Moth bean)
P. mungo Linn. (Black gram, Urd)
P. aureus Roxb. (Green gram, Mung)
P. lunatus Linn. (Lima bean)
P. vulgaris Linn. (Kidney bean)
Vigna sinensis Savi (Cowpea)
Dolichos lablab Linn. (Hyacinth bean)
Cajanus cajan Millsp. (Pigeonpea)
Capsicum annuum Linn. (Chilli)
Sesamum indicum Linn. (Sesame)

Sugarcane (*Saccharum officinarum* Linn.) is sown from January to April and cut during the following cold season.

2. The second agricultural year, viz. rabi (cold weather) season lasts from October to April. This season is well suited for the cultivation of crops of temperate countries. The important field crops of this season are

Triticum aestivum Linn. (Wheat)
Hordeum vulgare Linn. (Barley)
Avena sterilis Linn. var. *culta* (Oat)
Cicer arietinum Linn. (Gram)
Lens culinaris Medik. (Lentil)
Pisum sativum Linn. (Pea)
Trigonella foenum-graecum Linn. (Fenugreek)
Linum usitatissimum Linn. (Linseed, Flax)
Brassica campestris var. *sarson* Prain (Sarson)

Garden Crops. A number [illegible] garden [illegible] are [illegible] and [illegible] open in January and February, two months be[illegible] rabi harvest commences [illegible] the common one [illegible]

Lactuca sativa Linn. (Lettuce)
Helianthus tuberosus Linn. (Jerusalem artichoke)
Cynara scolymus Linn. (Globe artichoke)
Foeniculum dulce Spreng. (Anwain)
Foeniculum vulgare Mill. (Fennel)
Anethum graveolens Linn. (Dill, Sowa)
Daucus carota Linn. (Carrot)
Coriandrum sativum Linn. (Coriander)
Cuminum cyminum Linn. (Cumin, Zira)
Raphanus sativus Linn. (Radish)
Brassica oleracea var. *capitata* Linn. (Cabbage)
B. oleracea var. *botrytis* Linn. (Cauliflower and Broccoli)
B. oleracea var. *gemmifera* Zenker (Brussels sprouts)
B. oleracea var. *caulorapa* DC. (Knol-kohl)
B. rapa Linn. (Turnip)
B. juncea Czern. & Coss. (Leaf mustard)
B. nigra Koch (Black mustard)
Pisum sativum Linn. (Pea)
Beta vulgaris Linn. (Beet root)
Spinacia oleracea Linn. (Spinach)
Dioscorea bulbifera Linn. (Yam)
Allium cepa Linn. (Onion)
A. sativum Linn. (Garlic)
Amorphophallus campanulatus Bl. (Elephant foot yam)

During the summer months of April, May and June, the principal crops grown especially along the sandy banks of Jamuna River belong to the family *Cucurbitaceae*. Their fruits ripen in June and are commonly sold during these hot months in the bazaars of Delhi. The common ones are listed below.

Trichosanthes dioica Roxb. (Palwal, Parwal)
T. anguina Linn. (Snake gourd)
Lagenaria vulgaris Ser. (Bottle gourd)
Luffa acutangula Roxb. (Kali tori)
L. cylindrica Roem. (Ghia tori)
Momordica charantia Linn. (Bitter gourd)
Cucumis melo Linn. (Melon)
C. melo var. *momordica* Duthie & Fuller (Phoot, Kachra)
C. melo var. *utilissimus* Duthie & Fuller (Kakri)
Citrullus vulgaris Schrad. (Water melon)

Fruit Plantations and their Wild Stock.

Mangifera indica L.
Spondias pinnata K.
Manilkara hexandra Dub.
Achras sapota Linn. (Sapod
Grewia asiatica Linn. (Phalsa
Punica granatum L.
Syzygium jambos Skeels
Eriobotrya japonica Lindl. (Loquat)
Prunus persica Stokes (Peach
P. domestica subsp. *insitita*
P. salicina var. salicina Nakai (Plum)
Pyrus chinensis Sweet
Morus alba Linn. (White mulberry)
M. indica Linn. (Indian mulberry)
Artocarpus lakoocha Roxb.
A. heterophyllus Lamk. (Jack-tree)
Ficus glomerata Roxb. (Cluster fig)
Punica granatum Linn. (Pomegranate)
Citrus aurantium Linn. (Sour or seville orange)
C. maxima Merr. (Pumpelo, Shaddock)
Cordia dichotoma Forst. f. (Indian cherry)
Pithecellobium dulce Benth. (Manila tamarind)
Musa paradisiaca Linn. (Banana

Cissampelos pareira Linn.

Cardiospermum halicacabum L.

Trichosanthes

Melothria maderaspatana Cog.

Ichnocarpus frutescens Ait. & Ait. f.

Leptadenia reticulata Wt. & Arn.

Dregea volubilis Benth.

3. PLANTS ALONG [illegible] A study [illegible] along the canal banks shows how [illegible] Canal has modified the [illegible] conditions for plant growth in the [illegible] vegetation comprising of herbs and shrubs develops. The common ones are

Polygonum barbatum Linn. subsp. *gracile* Danser

Dioscorea cordifolia Roxb.

[illegible]
[illegible]
[illegible]
Phyllanthus fraternus Webster
[illegible]
[illegible]
[illegible]
[illegible]
Centella asiatica Urb.
Oldenlandia stipulaceae Wall.
Rotala indica Koern
Malvastrum coromandelianum Garcke
Urena lobata Linn.
Triumfetta rhomboidea Jacq.
Youngia japonica DC subsp *japonica*
Ageratum conyzoides Linn
[illegible]
[illegible]
[illegible]
Hemarthria compressa R. Br
Echinochloa crusgalli Beauv
E. colonum Link
Paspalum distichum Linn
Paspalidium flavidum A. Camus
Eragrostis gracera Hubb
Bidens biternata Merr. & Sherff

4. THE GROUND FLORA OF FRUIT ORCHARDS The special circumstances of this habitat brought about as a result of artificial irrigation are higher humidity and humus content, diffuse sunlight and a soil moistened by water from irrigation channels. Quite a large number of weeds, more or less delicate and shade-loving, are met with as herbaceous undergrowth in these gardens. It is a common feature to see that any one species completely dominates a particular area, forming a thick carpet of plants. Apart from these, many others have been and are being introduced from other countries and have become naturalized in the area. The common rainy season herbs are

Triumfetta rhomboidea Jacq.
Urena lobata Linn.
Malvastrum coromandelianum Garcke
Zornia diphylla Pers.
Desmodium gangeticum DC.
Erigeron canadensis Linn.
E. bonariensis Linn.
Bidens biternata Merr. & Sherff
Dipteracanthus prostratus Nees
Polygonum plebeium R. Br
Phyllanthus fraternus Webster
Typhonium trilobatum Schott
Cyperus kyllingia Endl
Imperata cylindrica Beauv
Paspalidium flavidum A. Camus
Echinochloa colonum Link
Ophiuros burmanni Beauv
Cynoglossum lanceolatum Forsk

The common cold season weeds are :

Coronopus didymus Sm.
Oxalis martiana Zucc.

Rottpna indica [illegible]
Sesbania sesban [illegible]
Synegalia [illegible]
Ageratum [illegible]
Euphorbia [illegible]
[illegible]
Solanum plandiflorum [illegible]
Petunia violacea [illegible]
Oxalis [illegible]

[illegible]

Rauvolfia serpentina Benth. [illegible] as a [illegible] the [illegible] in the Garden [illegible]. During the months of January and February [illegible] replaced by *Ageratum conyzoides* Linn. which then [illegible] dominates the ground flora. *Clerodendrum indicum* Kuntze [illegible] abundantly as a shrubby undergrowth in some areas of Tughlaq [illegible] Sabz Burji.

INTRODUCED FLORA OF THE STATE

Roadside and Avenue Trees. The city of New Delhi lies in a dense grove of trees. The common roadside trees are

Kigelia pinnata DC
Haplophragma adenophyllum P. Dop
Millingtonia hortensis Linn. f
Ficus virens Ait. var. *virens*
F. virens var. *sublanceolata* Corner
F. microcarpa Linn. f
F. religiosa Linn.
Adanthus excelsa Roxb.
Mangifera indica Linn
Dalbergia sissoo Roxb.
Tamarindus indica Linn
Cassia fistula Linn
Delonix regia Raf
Albizzia lebbeck Benth.
Terminalia bellirica Roxb
T. arjuna Wt. & Arn
Syzygium cumini Skeels
Azadirachta indica Juss.

The following trees and shrubs make fine avenues in gardens and parks

Cupressus sempervirens Linn.
Thuja orientalis Linn
Mimusops elengi Linn
Roystonea regia O. F. Cook
Polyalthia longifolia Thw

Trees and Shrubs of Public and Private Gardens, Lawns and Parks. The number of cultivated, ornamental and hedge plants, trees, shrubs and vines is very large. The majority of these are not native species but are exotics from Malagasy (Madagascar), South Africa, Tropical and

[illegible]

The [illegible] are

[illegible] Moldenke
Citharexylum spinosum Linn
Fuchsia offinalis [illegible]
Feronia limonia Swingle
Ochna squarrosa Linn
Melia azedarach Linn
Chukrasia tabularis A. Juss
Schleichera oleosa Oken
Milletia ovalifolia Kurz
Pongamia pinnata Pierre
Moringa oleifera Lamk
Bauhinia variegata Linn
B. purpurea Linn
Haematoxylon campechianum [illegible]
Cassia nodosa Buch.-Ham
C. javanica Linn
C. renigera Wall
C. siamea Lamk
C. fistula Linn
C. artemisioides Gaud
Delonix regia Raf
Acacia auriculiformis A. Cunn
Syzygium cumini Skeels
[illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible]
Pandanus fascicularis [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
Casuarina equisetifolia [illegible]
Cycas revoluta [illegible]
Pinus roxburghii Sarg

I. HEDGES. A number of large shrubs and small trees have been planted as hedges around gardens, parks, ancient [illegible] or purely ornamental effect, as screens for privacy or [illegible] de [illegible] jects or buildings, as shelter for livestocks or as barriers [illegible] passers and wild or domestic animals from fields and crops. There are many qualities that are desirable in plants used for hedging purpose

They should be [illegible]
required for [illegible]

[illegible]
[illegible]
[illegible]

Ipomoea quamoclit Linn.
I. coccinea Linn.
I. purpurea Roth
I. [illegible] Sweet
I. [illegible] Roth
I. [illegible] Linn.
Jacquemontia [illegible] C. Dom
Porana [illegible] Roxb.
Pharbitis [illegible] Mich.
Rhynchosia [illegible] Linn.
[illegible] radiatum Seem.
Thunbergia grandiflora Roxb.
[illegible] [illegible] C. Dom
[illegible] Linn.
Blumea [illegible] Wall.
[illegible] Kunze
[illegible] Linn.
[illegible] Hook. & Arn.
Bougainvillea [illegible] Willd.
[illegible] Linn.
[illegible] Roxb.
Jasminum [illegible] Linn.
Leptadenia [illegible] W. & A.
Tinospora [illegible] Miers
Pergularia [illegible] Linn.

Recently Introduced Weeds. A study of the weed flora has revealed that certain American weeds have recently been introduced into Delhi State and are rapidly becoming naturalized along roadsides, in lawns, fields, waste localities on the Ridge and as an undergrowth in gardens. The common ones are

Nicotiana plumbaginifolia Viv.
Alternanthera pungens H. B. & K.
Gomphrena celosioides Mart.
Chenopodium ambrosioides Linn.
Euphorbia geniculata Orteg.
E. prostrata Ait.
Jatropha gossypifolia Linn.
Croton bonplandianum Baill.
Solanum torvum Sw.
Opuntia dillenii Haw.
Oxalis latifolia H. B. & K.
O. martiana Zucc.
Erigeron bonariensis Linn.
Eichhornia crassipes Solms.

Some of these American weeds have well established in Delhi State. The conditions are so favourable that these are more vigorous in their new home than in the native lands. Merrill (1946) believes that at least in some cases this is because in their introduction they were unaccompanied by specific plant diseases and insect pests which checked their spread in the original homes.

STATISTICAL SYNOPSIS OF THE INDIGENOUS FLORA

Except for *Cyperaceae* and *Gramineae*, the Monocotyledones are very poorly represented. Of the 143 species of Monocotyledones (Table I), 118 species belong to the two families mentioned above, while the remaining 25 species belong to 14 different families. The ratio of species belonging to Monocots and Dicots is 1 : 2.7, of genera 1 : 3.2 and of families 1 : 4.7. It is interesting to note the proportion of genera to species. In the whole of India it is 1 : 7, in the Gangetic

Table [illegible] Statistical Synopsis of the Flora

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Families	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Genera	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Species	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 2 Ten Dominant Families in Delhi State, Gangetic Plain Region, Rajasthan and India

Delhi State	Gangetic Plain Region (Hooker, [illegible])	Rajasthan (Santapau & Henry, [illegible])	India (Hooker, [illegible])
Gramineae	Gramineae	Gramineae	Orchidaceae
Leguminosae	Leguminosae	Leguminosae	Leguminosae
Compositae	Cyperaceae	Compositae	Gramineae
Cyperaceae	Compositae	Cyperaceae	Rubiaceae
Acanthaceae	Scrophulariaceae	Convolvulaceae	Euphorbiaceae
Euphorbiaceae	Malvaceae	Amaranthaceae	Acanthaceae
Convolvulaceae	Acanthaceae	Boraginaceae	Compositae
Malvaceae	Euphorbiaceae	Cucurbitaceae	Cyperaceae
Amaranthaceae	Convolvulaceae	Euphorbiaceae	Labiatae
Scrophulariaceae	Labiatae	Malvaceae	Urticaceae

Table 3—Areas of Origin of the Plants of Delhi State

Region	Number of spp.	Percentage
N. African-Indian Desert Belt	22	4.60
Tropical Africa	37	7.73
Tropical Africa and N. African-Indian Desert Belt	23	4.81 } 30
Africa or West Asia	17	3.56
Mediterranean Region	10	2.09
Indian Region	81	16.95
Indo-Malayan Region and East Asia	33	6.90
Indo-Malaya and Africa	33	6.90
Temperate Region	8	1.67
New World	14	2.93
Tropical or cosmopolitan	200	41.8[illegible]

[illegible] in Delhi State [illegible] 163. The Plain Region [illegible] genera and species [illegible] the greater [illegible] the smaller the [illegible] species [illegible].

[illegible] of the Flora of Delhi State with the neighbouring [illegible] Punjab Plains, Rajputana and India [illegible] in Delhi State [illegible] Plain Region [illegible] given in order of their frequency [illegible].

Delhi is situated at the common border of Rajputana, Punjab Plains and the drier parts of Uttar Pradesh. As one would expect, the flora of Delhi characterized by the plains and the Ridge shows common features with the flora of these adjoining parts. Table 2 shows that the families Gramineae, Leguminosae [illegible] and [illegible] occupy the first four positions in the Flora of Delhi State, Gangetic Plain Region and Rajputana. Among the different types of vegetation found in India, the dry tropical scrub forests are found in Rajputana and the Punjab Plains where rainfall does not exceed 75 cm. The most characteristic trees are *Prosopis spicigera* Linn. and various species of *Capparis*, *Salvadora* and *Tamarix*. The indigenous vegetation of the upper part of the Gangetic Plain is a dry forest. The [illegible] forest in this region is characterized by *Anogeissus pendula* Edgew., *Acacia senegal* Willd., *Prosopis spicigera* Linn., *Boswellia serrata* Roxb., [illegible] Hook., *Moringa* sp. and *Rhus* sp. *Salvadora* spp. are characteristic of the so-called Usar or Reh lands which are impregnated with alkalies and occupy a considerable area of this region (Hooker, 1907). The extensive tracts of low and scattered bush jungle known locally as Rakhs and found in some parts of Punjab plains, consist chiefly of *Prosopis spicigera* Linn., *Salvadora oleoides* Decne., *Capparis decidua* Edgew., *Acacia arabica* Willd., *A. leucophloea* Willd., *Zizyphus nummularia* W. & Arn., and *Cocculus pendulus* Diels.

Among the types mentioned above, the Ridge vegetation is represented by *Prosopis spicigera* Linn., *Salvadora persica* Linn., *S. oleoides* Decne., *Capparis decidua* Edgew., *C. sepiaria* Linn., *Acacia leucophloea* Willd., *A. senegal* Willd., *A. arabica* Willd., *A. modesta* Wall., *Anogeissus pendula* Edgew., *Balanites roxburghii* Planch., *Butea monosperma* Taub., *Carissa spinarum* Linn., *Zizyphus nummularia* W. & Arn. and scattered individuals of *Rhus mysurensis* Heyne, etc. The occurrence of a mixture of these characteristic plants shows that the Ridge vegetation is composed of the floral elements of three abutting regions: Rajputana, the Punjab Plains and the drier parts of Uttar Pradesh.

NOTES ON THE FLORA

Out of 531 indigenous and naturalized species, 478 species have

been dealt with [illegible] Table 1 shows the areas of [illegible] the flora of the State [illegible] species are [illegible] These figures reveal [illegible] the area was denuded [illegible] the place formerly occupied by the displaced species. The [illegible] of foreign plants had a somewhat different influence on the [illegible] vegetation and [illegible] began on a [illegible] character. These [illegible] are [illegible] the Deccan [illegible] the summer and those [illegible] of western [illegible] genera are [illegible]

Blatter and Hallberg (1920) [illegible] showed three well marked elements in the flora of the Rajputana Desert: a western, an eastern, and a more general element (including Indian element). Similar elements have been noted in the flora of this area: one coming from the Malayan Region in the east, another from North Africa through Asia Minor and a third widespread element of the tropics and of purely Indian species. There are no endemic plants in Delhi State. Leaving aside the general element, the phytogeographical status of the flora shows that the western element consists of 109 species and the eastern element of [illegible] species. The eastern element in the area is about 1/3 of the western [illegible] in the flora of Rajputana Desert. Thus, the Indo-Malayan element is much less represented in Western Rajputana Desert. Blatter and Hallberg (1920) drew the line of demarcation between the Indo-Malayan flora and that of the Perso-Arabian Region from the Gulf of Cambay northwards along the Aravalis. This seems to be correct.

Nomenclature. The scientific names of the plants listed in the present work have been corrected as far as possible, but for those cases that come under the provisions of Article 43 of the present International Code of Botanical Nomenclature (1961) it is too difficult for the botanists in India to find out the actual or correct authors of the various names. For the genera *Desmodium* and *Desmodiopsis*, Schindler has shown that many of the plants under these two genera in India are wrongly attributed to De Candolle, they being wrongly identified. Until the monographs on these genera are published, the usual nomenclature found in authentic works on Indian botany has been followed. When a name other than the usual one has been adopted, the *basionym* on which the newer name is based, has also been given, showing the date of the latter, so that the names adopted are in conformity with the Rule of Priority. As a result many of the names given by J. D. Hooker, Duthie and Parker in their floras have been recreated to the synonymy and some new combinations have been adopted.

Citations and References to Plates. [illegible] given with the [illegible] Hooker [illegible] Bell [illegible] Flora [illegible] Indian Medicinal Plants [illegible] Bell and [illegible] Indian Cultivated and Wild Plants and Herbs and Medicinal Species Beautiful Indian Trees.

Keys, Order of Families, Local Names, Measurements, etc. The keys provided in the present work are based largely on [illegible] characters and are of two types, numerals and artificial. They have been divided into three main parts. [illegible] general keys to the leading families and genera, 2 keys to the genera of each family and 3 keys to the species and forest genera. In species-keys an attempt has been made as far as possible to make them dichotomous. In artificial keys the various genera of equal rank are marked by the same number. All keys have been kept as simple as possible and in doubtful cases the genus is included in more than one group.

For the sake of convenience Bentham and Hooker's order of families has been followed, the same arrangement having been recognized in Hooker's Flora of British India and Duthie's Flora of the Upper Gangetic Plain. As regards splitting of families, I have adopted, in general, Hutchinson's classification, published in his book "The families of flowering plants" (1926, 1934).

In describing the various parts of a grass floret Blatter and McCann's (1935) terminology has been used for the two classes of glumes, involucral and floral.

Only such vernacular names are given which I have ascertained to be in use locally. These names vary greatly from place to place and often the same name is used to indicate different plants, or very different plants have the same native names. In general, it has been noticed that only such plants which are economically useful have local names, small herbs which are not used either medicinally or as an article of food have no names. The uses of plants have also been recorded.

Throughout this work the decimal and metric systems are used. The measurements of plant parts, e.g. leaves 4-7 × 3-5 cm. means leaves 4-7 cm. long and 3-5 cm. wide.

The herbarium specimens cited in this work are housed in the Department of Botany, University of Delhi, Delhi.

Classification

Embryo with 2 cotyledons (rarely one by reduction) . Vascular [illegible] Cambium usually arranged in a single ring [illegible] Leaves usually reticulately veined . Flowers typically 5 or 4-merous

Class I DICOTYLEDONES

Embryo with one cotyledon . Vascular bundles of the stem usually scattered, cambium usually absent . Leaves usually parallel-veined . Flowers typically 3-merous . Class II MONOCOTYLEDONES

CLASS I DICOTYLEDONES

Petals free ; flowers dichlamydeous . . . Subclass I Polypetalae

Calyx of distinct sepals , ovary superior or immersed in the disk

Torus small or elongated, not expanded . . . . . Group I Thalamiflorae

Torus thickened or expanded into a fleshy disk . . . . . Group II Disciflorae

Calyx of united sepals , ovary usually included in calyx tube or inferior . . . Group III Calycifloraе

Petals united . . . . . Subclass II Gamopetalae

Perianth generally calycine, single or absent . . . Subclass III Monochlamydeae

Subclass I Polypetalae

Group I Thalamiflorae

1. Stamens numerous (15 or more)
   2. Gynoecium apocarpous carpels usually many but sometimes reduced to one :
      3. Habit terrestrial :
         4. Plants herbaceous . . . . . 1 Ranunculaceae
         4. Plants woody :
            5. Stipules convolute, sepals and petals imbricate fruit dry . . . 2. Magnoliaceae
            5. Stipules absent , sepals and petals valvate , fruit fleshy . . . . . 3. Annonaceae

[illegible] Nyctaginaceae

3. Fruit [illegible]

2. [illegible]

6. [illegible] by [illegible] of the [illegible]

7. [illegible] 9. Capparidaceae

7. [illegible] not elevated

8. Sepals 2 [illegible] 3 [illegible] 16. Papaveraceae

8. Sepals 4-5 fruit indehiscent flowers usually [illegible] 12. [illegible]

6. Placentation free-central or basal-central leaves fleshy herbs 14. Portulacaceae

6. Placentation usually axile, sometimes basal

9. Stamens monadelphous

10. Anthers unilocular

11. Carpels 5 [illegible] many often splitting away from the central axis or becoming free in fruit pollen rough, mostly herbs or shrubs 18. Malvaceae

11. Carpels 2-5 not or very rarely splitting away from the central axis in fruit; pollen smooth tropical trees . . . . . 19. Bombacaceae

10. Anthers bilocular 20. Sterculiaceae

9. Stamens distinct, anthers bilocular . 21. Tiliaceae

1. Stamens few, never more than 10

12. Gynoecium apocarpous, climbing shrubs 4. Menispermaceae

12. Gynoecium syncarpous, herbs, shrubs or trees:

13. Sepals 5, the two inner enlarged and often petaloid . . . . . 13. Polygalaceae

13. Sepals 2-5, not enlarged

14. Leaves scale-like, seeds winged 16. Tamaricaceae

14. Leaves well developed

15. Placentation parietal

16. Ovary open at top before seeds are ripe . . . . . 10. Resedaceae

16. Ovary closed at top

17. Connective of the anthers produced above the cells flowers zygomorphic, the lower petal often gibbous or saccate at the base 11. Violaceae

17. Connective of the anthers not produced, flowers actino- or zygomorphic:

18. Stamens 6, tetradynamous; sepals 4 . . . . . 8. Cruciferae

18. Stamens [illegible]
[illegible]
5. Placentas [illegible]
19. Sepals [illegible] petals [illegible]
[illegible]
5. Placentas [illegible]
20. Stamens monadelphous [illegible] 27. Sterculiaceae
20. Stamens not monadelphous, but separate
24. Leaves alternate [illegible] sepals valvate [illegible] 21. [illegible]
21. Leaves opposite, sepals imbricate [illegible] 17. Elatinaceae

Group II. Disciflorae

1. Placentas parietal; fruit a 3-valved elongated, pod-like capsule [illegible] 36. Moringaceae
1. Placentas axile or axile-pendulous; fruit not elongated
2. Styles 1-5, quite free; filaments often connate at the base;
3. Leaves compound; juice sour . . . . 25. Oxalidaceae
3. Leaves simple, sap not sour:
4. Leaves alternate; fruit not winged 22. Linaceae
4. Leaves opposite; fruit winged 23. Malpighiaceae
2. Styles more or less connate or solitary; stamens generally free
5. Herbage covered with glandular dots 26. Rutaceae
5. Herbage not covered with glandular dots:
6. Stamens monadelphous . . . . . 30. Meliaceae
6. Stamens free, distinct:
7. Ovules usually 1 in each cell:
8. Stems bearing resin passages 35. Anacardiaceae
8. Resin passages not usually present
9. Leaves compound
10. Flowers regular; styles 2-5 . . . . 27. Simaroubaceae
10. Flowers irregular; style simple, sometimes divided above . . . . . 34. Sapindaceae
9. Leaves simple
11. Lateral nerves usually parallel . . . 28. Ochnaceae
11. Lateral nerves not conspicuously parallel
12. Plants usually armed with prickles; fruit dry or a drupe, not winged . . .

33 Rhamnaceae

13 Plants unarmed, fruit winged
34 Sapindaceae

7 Ovule usually 2 in each cell, sometimes many
13 Plants resinous, leaves dotted 29. Hypericaceae
13 Plants not resinous, leaves not dotted
14 Plants usually climbers, fruit bacciate
33 Vitaceae
14 Plants usually not tendril-bearing, fruit dry, capsular, indehiscent or splitting at maturity
15 Leaves simple
16. Stamens 3-5; style short or 0 . . . . 31. Celastraceae
16 Stamens often 8, styles 2-4, simple or divided . . 34. Sapindaceae
15 Leaves compound or multifid
17 Herbs or undershrubs, leaves stipulate or stipules modified into thorns . . . . . 24. Zygophyllaceae
17 Trees or shrubs, leaves exstipulate . . . . 34. Sapindaceae

Group III Calyciflorae

1 Fruit a legume.
2. Flowers papilionaceous; odd petal adaxial . . . . . 37. Papilionaceae
2. Flowers zygomorphic but not papilionaceous, odd petal not adaxial . . . . . 38. Caesalpiniaceae
2 Flowers regular, in heads or dense spikes 39 Mimosaceae
1 Fruit a capsule, achene, drupe, berry, pepo, nut or schizocarp
3. Stamens usually indefinite:
4. Leaves usually much reduced or 0, succulent plants with jointed phylloclades, prickly . 49 Cactaceae
4. Leaves well developed:
5. Calyx free from the ovary:
6. Carpels distinct or solitary; leaves stipulate; petals usually present 40. Rosaceae
6. Carpels more or less combined, leaves exstipulate
7 Petals present (sometimes absent), episepalous and crumpled in bud, leaves not fleshy, ovary 2 to 6-celled, ovules usually on axile placentas, herbs, shrubs or trees . . . . . 43 Lythraceae
7 Petals absent; leaves often fleshy; ovary 1 to 2-celled, ovules basal; herbs . 51. Aizoaceae

5. Calyx more or less adnate to the ovary
   8. Locules of ovary [illegible]
   8. Locules of ovary not superior
      9. Ovary [illegible] free [illegible] of placentae
      9. Ovary [illegible] parietal placentae
3. Stamens [illegible] more than 10
   10. Ovary half inferior or inferior
      11. Aquatic herbs
      11. Terrestrial
         12. Flowers in simple or compound umbels, foliage aromatic, petioles sheathing
         12. Flowers solitary, axillary or in racemes, spikes or cymes, foliage not aromatic
            13. Stems tendril-bearing, flowers unisexual, habit chiefly climbing or prostrate
            13. Stems without tendrils, flowers generally hermaphrodite; habit erect, prostrate or climbing
               14. Calyx or calyx tube free from the ovary
                  15. Petals present (sometimes absent), epipetalous and crumpled in bud, leaves not fleshy, seeds non-endospermic
                  15. Petals absent; leaves often fleshy, seeds endospermic
               14. Calyx or calyx tube adnate to the ovary
                  16. Trees, shrubs or climbers; fruit often winged
                  16. Herbs or undershrubs, fruit not winged
10. Ovary superior:
   17. Small trees or shrubs, with milky juice, petals united into a slender tube, fruit a large, pulpy berry
   17. Herbs, without milky juice; petals not united into a tube, fruit dry

Subclass II Gamopetalae

1. Ovary inferior or adnate to the calyx:
   2. Ovary usually with more than 1 cell; anthers not united:
      3. Leaves opposite, inflorescence various; terrestrials.
         4. Leaves usually exstipulate, if stipulate, then usually compound . . . . . 53 Caprifoliaceae

4. Leaves [illegible] or apparently whorled and with or without [illegible] 54. [illegible]
3. Leaves alternate. Flowers in [illegible] spikes [illegible] 56. [illegible]
55. [illegible]

2. Stamens [illegible] anthers united
1. Ovary superior or free
5. Leafless, non-green, root or stem parasites and leafy [illegible] semi-parasites
6. Parasites terrestrial 71. [illegible]
7. Stem parasites 74. Orobanchaceae
7. Root parasites 75. [illegible]
6. Carnivorous aquatics
5. Green plants, not carnivorous and seldom parasitic
8. Leaves radical; inflorescence scapose, capitate or spicate 82. Plantaginaceae

8. Leaves generally alternate
9. Flowers usually unisexual, stamens inserted on the receptacle 60. Ebenaceae

9. Flowers bisexual; stamens inserted on the corolla
10. Ovules indefinite in each cell
11. Style usually deeply 2-cleft 67. Hydrophyllaceae
11. Style linear or not deeply 2-cleft 72. Solanaceae
10. Ovules definite in each cell
12. Styles 5, stamens opposite the petals, placentation free-central 57. Plumbaginaceae
12. Style simple or once or twice forked, placentation not free-central
13. Trees and shrubs
14. Plants with milky juice; corolla 4 to 8-lobed, fruit a berry 59. Sapotaceae
14. Plants without milky juice; corolla usually 5-lobed, fruit a drupe or of 4 nutlets [illegible], 69. Ehretiaceae
13. Herbs or undershrubs:
15. Habit chiefly climbing or twining; style terminal, fruit a capsule 70. Convolvulaceae
15. Habit erect, diffuse or prostrate, style usually gynobasic; fruit of four, 1-seeded nutlets or a drupe 68. Boraginaceae

8. Leaves at least the lower ones opposite (alternate in *Jasminum humile*):
16. Flowers regular, ovary generally of 2 carpels, sometimes 1 or 3
17. Plants with milky latex:

8 Filaments free; pollen not agglutinated; [illegible]
8 Filaments united into a tube; pollen agglutinated [illegible]
17 Placenta in the ovary [illegible] 64 Asclepiadaceae
19 Stamens 2
19 Stamens 4 or 5 61 Oleaceae
20 Trees or shrubs
21 Ovary usually 1-celled; ovules 1-2 in each cell 62 Salvadoraceae
21 Ovary usually 2-celled, ovules usually many in each cell 65 Loganiaceae
20. Herbs:
22. Stamens opposite the petals; placentation free-central 58 Primulaceae
22. Stamens alternate with the petals; placentation parietal 66. Gentianaceae
16 Flowers irregular; ovary of 2-4 carpels:
23 Fruit elongated; seeds winged 76 Bignoniaceae
23 Fruit not elongated; seeds not winged
24. Bracts conspicuous; stems with swollen joints 79 Acanthaceae
24. Bracts minute or absent; joints of stem not swollen
25. Flowers with extra-floral glands (metamorphosed flowers) at the base of the pedicels; fruit commonly spiny or with hooked prongs
26. Placentas axile 77 Pedaliaceae
26. Placentas parietal 78 Martyniaceae
25. Flowers eglandular at the base; fruit not commonly spiny
27. Ovule 1 or 2 in each cell;
28. Ovary entire; style terminal 80. Verbenaceae
28. Ovary 4-lobed; style gynobasic 81. Labiatae
27. Ovules many in each cell 73. Scrophulariaceae

Subclass III Monochlamydeae

1. Flowers all bisexual:
2. Ovary superior:
3 Leaves with ocreate stipules 87 Polygonaceae

3. Leaves exstipulate — 89. Proteaceae
  4. Trees
  4. Herbs or shrubs
    5. Perianth bract-like
      6. Flowers bracted, the bracts and sepals mostly scarious — 84. Amaranthaceae
      6. Flowers bracteolate or ebracted, the bracts not scarious, sepals green — 85. Chenopodiaceae
    5. Perianth not bract-like
      7. Herbs or shrubs, sometimes struggling; flowers in heads, cymes or umbels; stamens [illegible] — 83. Nyctaginaceae
      7. Twiners; flowers in spikes, racemes or panicles; stamens not as above — 86. Basellaceae
2. Ovary inferior
  8. Non-parasitic herbs or shrubs, often climbing — 88. Aristolochiaceae
  8. Chlorophyll-bearing, woody, semi-parasites — 90. Loranthaceae

1. Flowers unisexual or polygamous
  9. Male and (or) female flowers in catkins or spikes
    10. Plants with milky juice — 93. Moraceae
    10. Plants without milky juice
      11. Leaves much-reduced, scale-like; ovules with numerous embryo sacs; fruit 1-seeded, crowded into a cone — 95. Casuarinaceae
      11. Leaves well developed; ovules with only one embryo sac; fruit many-seeded, a capsule — 96. Salicaceae
  9. Flowers not in catkins or spikes
    12. Aquatics; perianth absent; carpel 1; leaves finely dissected — 97. Ceratophyllaceae
    12. Terrestrials
      13. Ovary 3-celled, with 1 or 2 ovules in each cell — 91. Euphorbiaceae
      13. Ovary 1-celled
        14. Leaves exstipulate — 84. Amaranthaceae
        14. Leaves stipulate
          15. Plants aromatic; fruit an achene — 94. Cannabinaceae
          15. Plants not aromatic; fruit a samara, nut, drupe or multiple
            16. Sap milky; fruit commonly multiple — 93. Moraceae
            16. Sap not milky; fruit a samara, nut or drupe — 92. Ulmaceae

1. Foliage of the palm-type [illegible]
1. Foliage not palm-like; flowers not large [illegible]
2. Perianth none, at least in the male fl[illegible] all or rudimentary [illegible]
3. Flowers in the axils of [illegible] glumes [illegible] arranged in [illegible]
4. Culms mostly solid, usually [illegible] leaves not [illegible] leaf sheath [illegible] 149. Cyp[illegible]
4. Culms mostly hollow, cylindrical or flattened, noded [illegible] ligulate; leaf sheaths split; fruit a [illegible] 123. Gramineae
3. Flowers not in the axils of dry chaffy bracts [illegible] scale
5. Parts of perianth represented by bristles [illegible] with staminate flowers above and pistillate flowers below [illegible] long terminal spikes [illegible] 2. Typha cea
5. Parts of perianth lacking or of 4-8 [illegible]
6. Floating or submerged aquatics
7. Minute, floating thalloid aquatics; stigma truncate or funnel-shaped [illegible] 1. 4. Lemna cae
7. Filiform, submerged aquatics; stigma large [illegible] deflexed [illegible] 118. Zannichelliaceae
6. Terrestrials
8. Woody plants; leaves spinose on the keel and margins; staminate and pistillate organs separate [illegible] 111. Pandanaceae
8. Tuberous herbs (sometimes woody); leaves spine[illegible] staminate flowers at the top and pistillate flowers beneath on the same axis [illegible] 113. Araceae
2. Perianth present, usually of 2 series, at least the inner petaloid, not of bristles or scales:
9. Pistils one to several, not united, each representing one carpel
10. Perianth composed of calyx and corolla; parts 6, in 2 series [illegible] 115. Alismataceae
10. Perianth, if present, calyx-like or of only one whorl of parts
11. Perianth corolla-like, of only one whorl of parts [illegible] 116. Aponogetonaceae
11. Perianth none, but with sepal-like appendages on the stamens [illegible] 117. Potamogetonaceae
9. Pistils [illegible] of united carpels, as evidenced by placentas, stigma lobes and style branches
12. Ovary superior;

[illegible]

4. Flowers [illegible] 109. [illegible]

5. Plants not grass-like [illegible]

6. [illegible] 103. Aga[illegible]

6. Plants not or only slightly scrambling [illegible] leaves not whorled

17. Leaves 3 to 5-nerved [illegible] flowers unisexual [illegible] plants often with tendril-like [illegible] and prickly stems and branches 106. Smilacaceae

1. Leaves with parallel venation. flowers hermaphrodite, rarely unisexual, plants without tendrillar petioles and prickles 105. Liliaceae

12. Ovary and fruit partly or wholly inferior

18. Fertile stamens 1-2, the other often becoming petaloid staminodia and more conspicuous than the perianth

19. Stamen or stamens grown together with the pistil to form a gynandrium or column, ovary twisted, pollen often agglutinated in pollinia [illegible] 99. Orchidaceae

19. Stamens and pistil not so grown together, ovary not twisted 10. Zingiberaceae

18. Fertile stamens 3 or more, no petaloid staminodia

20. Habit aquatic, submerged or floating 98. Hydrocharitaceae

20. Habit terrestrial

21. Perianth segments in 2 series, the outer differing from the inner in size, shape or colour

22. Petals dissimilar or only one; plants mostly large, almost tree-like [illegible] 100. Musaceae

22. Petals essentially alike, 3 in number; plants usually not very large 102. Amaryllidaceae

2 Perianth segments [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

23 Plants herbaceous or [illegible] with [illegible] [illegible] flowers [illegible] [illegible] Dracaenaceae

23 Plants that [illegible] [illegible] flowers [illegible] [illegible]

24 Leaves mostly [illegible] thick and fleshy; flowers more or less large [illegible] [illegible] present [illegible] Agavaceae

24 Leaves not fibrous; flowers [illegible] [illegible] the top of the scape [illegible] [illegible] [illegible] 132 Amaryllidaceae

Families

CLASS I DICOTYLEDONES

1. Ranunculaceae

Ranunculus [illegible]

Some aquatic or moisture-loving herbs with yellow flowers ... *R. sceleratus*

Aquatic herbs with white flowers ... *R. aquatilis* var. *trichophyllus*

R. sceleratus Linn. Sp. Pl. 551, 1753; FBI 1 : 19; FUGP 1 : 19

An erect glabrous annual 30-60 cm tall. Stems succulent, branched, furrow ribbed. Radical leaves long-petiolate, segments obovate, cuneate. Cauline leaves shortly petiolate, 3-fid or partite, with linear segments. Flowers yellow. Calyx reflexed. Achenes many, in oblong heads, obliquely obovate.

A common herb during winter and early summer days near water. Found in Oxhla and along the banks of Jamuna River as well as on the temporary muddy flats of Khadar area in sandy-clayey or silty, moist soils.

Local name : Jadhania
Flowers and Fruits : Jan.-June
J. K. Maheshwari 592

R. aquatilis Linn. var. **trichophyllus** Hook. f. & Thoms. in FBI 1 : 16, 1872; FUGP 1 : 19.

R. aquatilis Linn. Sp. Pl. 556, 1753, in part; Don in Royle, I : 54.

The occurrence of this plant is given on the authority of Royle (loc. cit.) who describes it as occasionally in the Gangetic Plain as far south as Saharanpur and Delhi. I have not seen the plant on the field. A short description is reproduced below.

Leaves all submerged, segments thread-like, stipules auricled. Flowers white, shortly pedicelled. Stamens few. Achenes in globular heads, transversely wrinkled.

2. Magnoliaceae

Flowers axillary; syncecium stipitate . . . . . *Michelia*

Flowers terminal, genus [illegible] *Magnolia*

Michelia Linn.

M. champaca Linn. Sp. Pl. 536, 1753; Benthall, Trees Calc. 5

An evergreen tree with oblong crown. Leaves [illegible] cm, ovate-lanceolate, tapering at ends, entire or wavy. Flowers yellow, scented. Fruiting spikes 7.5-8.5 cm long. Carpels wrinkled.

Planted in avenues, parks.

Local name : Champa
Flowers : April-May. Fruits : June-Aug.
J. K. Maheshwari 1177

Magnolia Linn.

M. grandiflora Linn. Syst. 1082, 1759; Benthall, Trees Calc. 3

An evergreen, small tree with a pyramidal, dense crown. Leaves thick, firm, oblong, obovate or elliptic, glossy green above, pale beneath. Flowers white.

Occasionally planted in gardens.

Flowers : Aug.-Sept.
J. K. Maheshwari 576

3. Annonaceae

Tepals in two series or those of third series very small; carpels subconnate; fruit a fleshy syncarp or 'apple' formed by the fusion of pistils and receptacle . . . . . *Annona*
Tepals in 3 series; carpels free; fruit a cluster of drupels . . . *Polyalthia*

Annona Linn.

A. squamosa Linn. Sp. Pl. 537, 1753; FUGP 1: 23; Benthall, Trees Calc. 12

A shrub or small tree. Bark grey. Leaves oblong-lanceolate, 8-15 × 2-3 cm, glabrous. Flowers greenish-yellow, drooping, solitary or more on short, leaf-opposed peduncles. Fruit a fleshy syncarp, globular, cordate-ovoid or conical, yellowish-green; pulp sweet. Seeds large, black.

Occasionally cultivated in gardens for its delicious fruits.

Local name : Sharipha
Flowers : May-June
J. K. Maheshwari 1418

[illegible]

Local name : Ashok
Flowers and Fruits : May-June
J. K. Maheshwari [illegible]

4. Menispermaceae

[illegible]

Carpels solitary
Carpels 3 or more
Leaves ovate-oblong, villous, dark green [illegible] *Cocculus*
Leaves ovate or ovate-cordate, glabrous, green [illegible] *Tinospora*
Ovaries 3 or fewer by abortion [illegible] *Tinospora*
Ovaries 3-12 [illegible]

Cissampelos Linn.

C. pareira Linn. Sp. Pl. 1031, 1753 ; FBI. 1 : 103 ; FUGP. 1 : 3[illegible]
Parker For. Fl. II.

A trailing perennial shrub, putting forth annually long, twining [illegible] branches. Leaves 4-10 × 4-10 cm., triangularly broad cordate, hemispherical or suborbicular, usually peltate, mature ones glabrous above, glaucous beneath. Flowers pale green, minute. Male flowers [illegible] axillary, branched cymes, densely tomentose. Female flowers 1-2, in the axil, of conspicuous bracts. Drupes 4×5 mm., subglobose, red when ripe.

Common in fruit orchards and hedges of parks and gardens on moist soil, either creeping on the ground or twining around trees and shrubs. The roots are sold in the market as a drug. The leaves are said to be used for sores and itches.

Local name : Patai ki bel ; Nirbisi ; Jaljamuni
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 452

Cocculus DC. nom. cons.

C. hirsutus (Linn.) Diels in Pflanzenr. 46 : 236, 1910 ; Santapau in RBSI 16(1) : 5, 1953.
Menispermum hirsutum Linn. Sp. Pl. 341, 1753

[illegible]

Flowers [illegible] Feb-March
J. K. Ma[illegible] 616 [illegible] 1133

Tinospora Miers

T. cordifolia (Willd.) Miers in Ann. & Mag. nat. Hist. ser. 2, 7 38, 85 FBI 1 97, FUGP 1 26.

Menispermum cordifolium Willd. Sp. Pl. 4 826. 1806

A glabrous, climbing shrub. Leaves cordate, petiolate. Flowers small, yellow, male ones in fascicles, female usually [illegible]

Grown for its decorative foliage in gardens and along the streets of Delhi as a climber on trees or along the walls.

Local name Gulo
J. K. Maheshwari 100

Tiliacora Colebr.

T. acuminata (Lamk.) Miers in Ann. & Mag. nat. Hist. ser. 2, 7 39, 185, Diels in Pflanzenfam. 46 : 61

Menispermum acuminatum Lamk. Encycl. 4 : 101. 1797

Tiliacora racemosa Colebr. in TLS 13 67, 1822, FBI. 1 99, FUGP 1 27

An evergreen, climbing shrub. Leaves ovate or ovate-cordate 10-15 × 7-10 cm., dark green, margins undulate. Flowers yellow, dioecious, in axillary panicles.

Occasionally grown in gardens for its ornamental foliage and fragrant flowers.

Flowers : Sept.-Oct.
J. K. Maheshwari 1311

5. Nymphaeaceae

Leaves floating : ovary composed of many cells . . . . *Nymphaea*
Leaves raised above the water : carpels distinct : sunk in fleshy torus . . . . . *Nelumbo*

Nymphaea L. [illegible]

[illegible] anthers with long appendages [illegible]

[illegible] anthers without appendages [illegible]

[illegible] Sp. Pl. 2 [illegible] FBI 1 [illegible] FGP [illegible] 34.

N. stellata [illegible] Sp. Pl. 2 [illegible] Leaves [illegible] of ellipt. [illegible] base [illegible] with a wide [illegible] Flowers white, blue, rose or purple, mostly [illegible] globose.

Habitat: [illegible] ponds

Local name: Chota kamal

Flowers and Fruits: Sept.-Oct.

J. K. Maheshwari 243

N. nouchali Burm. f. Fl. Ind. 120, 1768; Merr. in Philip. Jour. Sci. (Bot.) 19: 350, 1921 & Enum. 2: 140, 1923.

Nymphaea pubescens Willd. Sp. Pl. 2: 1253, 1799.

N. lotus Hook. f. & Thomson in FBI. 1: 114, 1872 (non Linn.).

A flowering aquatic herb. Leaves sagittate when young, sharply [illegible], pubescent beneath. Flowers variable in size and colour, opening in the morning, closing shortly before noon. Anthers without appendages. Berries globose, ripening under water; stigmatic rays with appendages. Seeds broadly ellipsoid.

Common after the rains in Najafgarh Drain, Hindan River and in the temporary water marshes of Shahdara. The rhizome is eaten either raw or cooked. The flowers are sold in the market and from which several preparations known locally as Ghulad, Gulkand etc. are made. Planted as an aquatic ornamental in gardens.

Dobie in FLGP 11: 33, 19033 records the occurrence of *N. lotus* Linn. from the Upper Gangetic Plain. According to Conard (Rhodora 8: 161-164, 1916) this is not an Indian species. He distinguished two different species on the flower colour: *N. rubra* Roxb. and *N. pubescens* Willd. I have followed Santapau (RBSI 16: 7, 1953), in combining *N. rubra* Roxb. with *N. pubescens* Willd., since there is a wide range of flower colours.

Local name: Salak ke patake; Kamal-kakri; Neelophal

Flowers and Fruits: Sept.-Oct.

J. K. Maheshwari 435

Nelumbo Adans.

N. nucifera Gaertn. Fruct. 1: 73, t. 19, f. 2, 1788; Santapau in RBSI 16(1): 7, 1953.

Nymphaea nelumbo Linn. Sp. Pl. 511, 1753.

Nelumbium speciosum Willd. Sp. Pl. 2: 1258, 1799; FBI 1: 116; FGP 11: 35.

[illegible]

Local name : Ka [illegible]
Flowers and Fr [illegible] : Aug. Oct
J. K. Maheshwari [illegible] 56

6. Papaveraceae

Plants prickly ; sap yellow [illegible]
Plants glaucous or hispid, but not prickly ; sap milky [illegible] *Po.*

Argemone Linn.

Flowers yellow [illegible] *A. mexicana*
Flowers white [illegible] *A. ochroleuca*

A. mexicana Linn. Sp. Pl. 508, 1753 ; FBI 1 : 117 ; Stewart Pun. Pl. 9 ; Prain in Jour. Bot. 33 : 308, 1895 ; FUGP 1 : 36.

A robust herb to bushy undershrub, branching from below. Stem and branches woody. Leaves glaucous, prickly, sinuate-pinnatifid. Flowers yellow. Stigmas red. Capsules erect, prickly, dehiscing by valves. Seeds black.

Introduced from Mexico. Common in waste places, fallow fields and along roadsides. Often appears on recently disturbed soils and can be seen on the Old Delhi Ridge near the Reservoir. The latex is used in dropsy, jaundice and eye troubles. Stewart (loc. cit.) reports that near Delhi an oil is extracted from seeds which is used for burning and is applied medicinally ; dishonest merchants use the oil to adulterate edible oils, but the oil is dangerous.

Local name : Lankatera, Kateli, Kandiari
Flowers and Fruits : Oct.-April
J. K. Maheshwari 27

A. ochroleuca Sweet Brit. Fl. Gard. 3 : t. 242, 1828 ; Ownbey in Man. Torr. Bot. Club 21 : No. 1, 1958.

Differs from the preceding species in its yellowish flowers and its

[illegible] flowers [illegible] herb [illegible] to be [illegible] a [illegible] species, being [illegible] blood [illegible] Mathura. [illegible]

A recently introduced weed occurs rarely in waste places and on [illegible] roadsides. Natural hybrids between [illegible] and [illegible] are met with in the area.

Flowers and fruits: Oct.-April.

Papaver L. sp.

P. somniferum Linn. Sp. Pl. 508. 1753; J.B. 1: 137; F.I. C+P. 36.

A glaucous, erect annual. Leaves amplexicaul, lobed. Flowers large, white, red, purple or scarlet. Capsules stalked, globose. Seeds white or black.

Cultivated on a small scale for its latex and seeds.

Local name: Post; Afim. English name: Opium Poppy.
Flowers and Fruits: Jan.-April.
J. K. Maheshwari 1378.

7. Fumariaceae

Fumaria Linn.

F. indica (Hausk.) Pugsley in JLS. 44: 313, 1919.

F. vaillantii var. *indica* Hausk. in Flora 56: 443. 1873.
F. parviflora Wt. & Arn. Prodr. 18, 1834 (non Lamk.).
F. parviflora var. *vaillantii* Hook. f. & Thoms. FI. Ind. 258. 1855.
F. parviflora subsp. *vaillantii* Hook. f. in FB. 1: 138. 1872.

A diffusely spreading, much-branched, glaucous annual. Latex watery. Leaves finely divided, segments flat. Flowers rosy-purplish, about 6×2 mm. Fruits globose, indehiscent, 1-seeded, about 2.5–2.5 mm.

Common as a winter season weed in cultivated fields and garden beds on moist, sandy soil. Appears annually in the garden beds of Delhi University Campus along with the winter ornamentals. A decoction of the plant is said to be used for blood purification.

Local name: Papra; Kilano, Pitpapada.
Flowers and Fruits: Nov.-Feb.
J. K. Maheshwari 618, fields of Timarpur.

8. Cruciferae (Brassicaceae)

1. Pods indehiscent, long or short:
   2. Pods broader than long; beak absent ..... *Coronopus*
   3. Pods elongate, beaked ..... *Raphanus*

Pods [illegible] or short

3. Pods terete or compressed dorsally, many-seeded

4. Pods long and narrow, seeds in 2 rows

5. Flowers white

5. Flowers [illegible]

4. Pods [illegible] narrow, seeds in [illegible] rows — *Nasturtium*

4. Pods short and broad, seeds 1 or 2-seriate — *Raphanus*

6. Hoary herbs, flowers white; seeds winged — *Coronopus*

6. Glabrous herbs, flowers yellow, seeds [illegible] — *Lepidium*

3. Pods [illegible] beaked, seeds 1- or 2-seriate — *Coronopus*

7. Flowers yellow, seeds 1-seriate — *Rorippa*

7. Flowers lilac or yellow with purple [illegible] seeds [illegible] — *Erucaria*

1. Pods short, compressed laterally, 2-seeded — *Lepidium*

Coronopus Zinn nom. cons.

C. didymus (Linn.) Sm. Fl. Brit. 2 : 691, 1800. Exc. Cat. Vas. P. S. Tomé 105, 1944.

Lepidium didymum Linn. Sp. Pl. 2 : 643 & Mant. 92, 1767.

Senebiera pinnatifida DC. in Mém. Soc. Hist. Nat. Par. 144 t. 9, 1799. Fl. GP. I : 47.

A prostrate or ascending, branching, leafy, rather hispid herb, often forming a rosette. Leaves pinnatifid or pinnate-partite, lobes spreading. Flowers pale green, small, sometimes apetalous, diandrous. Pods 1 - 2 mm., separating into 2, indehiscent, reticulate lobes. Seeds about 1 × 1 mm., brown.

A winter season weed. Highly variable in its size and appearance. Found in fields and open places on moist sandy soil; abundant in winter, rare in summer and early rainy season. The plants that survive till early summer become somewhat woody.

Local name : Jangli bala ; Panacholi ; Halo
Flowers and Fruits : Jan.-May
J. K. Maheshwari 979, University Campus

Raphanus Linn.

R. sativus Linn. Sp. Pl. 669, 1753 ; FBI. 1 : 166. Fl. GP. : 48.

A coarse, fleshy-rooted annual or biennial. Roots variable in size, shape and taste. Flowers white or lilac with purple veins. Pods terete.

Cultivated during the cold season for its edible roots and young leaves. Some of the recommended, improved cultivars are : Large Crimson, Contai short, Queen of the market, Violet Giant and Chinese Rose.

Local name : Muli ; English name : Radish

Flowers and Fruits : Dec. June
J. K. Maheshwari 568, 981

Nasturtium R. Br. [illegible]

N. officinale R. Br. in Ait. f. Hort. Kew. 4 : 111, 1812 ; FBI. 1 : 133 [illegible]

A [illegible] small herb. Leaves dark purple in colour. Flowers white in short racemes. Pods stalked, cylindrical, 10-20 × 1.5 mm. [illegible] along the banks of Jamuna River in winter on wet, muddy soil.

English name : Water-cress
Flowers and Fruits : February
J. K. Maheshwari 845

Rorippa Scop.

Leaf margin toothed . . . . . *R. indica*
Leaf margin entire . . . . . *R. montana*

R. indica (Linn.) Hiern, Cat. Afr. Pl. Welw. pt. 1 : 26. Add. & Corr., 1896.
Sisymbrium indicum Linn. Mant. 1 : 93, 1767.
Nasturtium indicum DC. Prodr. 1 : 139, 1824 ; FBI. 1 : 134 ; FUGP. 1 : 39.

An erect, glabrous or hairy annual, 15-60 cm. tall. Radical leaves pinnatifid, lobes toothed. Upper leaves lyrate. Flowers yellow, small, in long racemes. Pods 1.2-2 × 0.15 cm., narrow, cylindrical.

Found in moist places in gardens and waste grounds. The seeds are used in the treatment of chronic fever.

Local name : Khubkalan
Flowers and Fruits : Feb.-July
J. K. Maheshwari 698, 926, 1160

R. montana Small, Fl. S.E. U.S. 1336, 1913.
Nasturtium montanum Wall. Cat. 4778, 1831, in part ; FBI. 1 : 134 ; FUGP. 1 : 40.

An erect, branching herb. Radical leaves pinnatifid or not, lobes entire. Flowers yellow. Pods 2.5-4 × 0.15 cm., narrow, cylindrical.

Common in damp places in gardens and waste ground. It much resembles the preceding species except for the leaves.

Flowers and Fruits : Feb.-July

Sisymbrium Linn.

S. irio Linn. Sp. Pl. 659, 1753 ; FBI. 1 : 150 ; FUGP. 1 : 42.

An annual herb, highly variable, 20-60 cm. tall. Stems 2-10 mm. thick.

Leaves pinnatifid [illegible]

Abundant in the [illegible] fallow and cultivated fields [illegible] known in the area. [illegible] different localities.

Flowers and Fruits : Feb.-April
J. K. Maheshwari 982

Farsetia Turra

F. hamiltonii Royle, Ill. 71, 1839 FBI I 140 FUGP I 41

An erect or ascending, branching hoary herb. Leaves [illegible] Flowers whitish small. Pods 1-2 × 0.4-0.5 cm. [illegible] pointed. Seeds deep brown, orbicular.

Found in dry, sandy or clayey soils of fields near Hauz Khas [illegible] and other urban areas. Duthie in FUGP [illegible] colour as pink, but I have not come across this colour in the area.

Local name : Bui
Flowers and Fruits : April-Oct
J. K. Maheshwari 318

Cochlearia Linn.

C. cochlearioides (Roth) Santapau & Mahesh. in JBNHS. 54 804 1957
Alyssum cochlearioides Roth, Nov. Pl. Sp 322. 1821
Cochlearia flava Buch.-Ham. ex Roxb Hort Beng 48, 1814 nom nud FBI I 145

An erect, diffusely branched, glabrous annual. Roots long, fusiform. Leaves 10-13 × 2.5 cm., pinnatifid; lobes sinuate-toothed. Flowers yellow, small. Pods globose, smooth. Seeds rugose.

Found along river banks and in damp places.

Flowers and Fruits : Cold season
J. K. Maheshwari 1437

Brassica Linn

Plants glaucous-blue, blue-green or glaucous-red; leaves of the floral shoots clasping or amplexicaul; flowers large, creamy-yellow, pale yellow to white; sepals erect :

Roots tuberous ; leaves (except cauline ones) thin, green ; foliage firm in texture ; flowers smaller, bright yellow . *B. rapa*

Roots not tuberous ; leaves thick or fleshy, glaucous :

Seeds large, mostly 2-3 mm. long, rounded, not tapering to either

and not connected, leaves thick, fleshy, obovate or oblong [illegible] *B. oleracea*

[illegible] broad [illegible]

Seeds small, mostly less than 2 mm [illegible] lyrate-pinnatifid, upper angled or connected flower [illegible] upper ones oblong, prominently cordate-auriculated *B. campestris* var. *narinosa*

[illegible]

Fleshy green or slightly glaucous; leaves of the floral shoots not prominently clasping, flowers small, light [illegible] sepals erect [illegible] spreading [illegible] *B. rotundifolia*

[illegible] rosettes, green, hairy [illegible]

Leaves [illegible] above green or fleshy glaucous [illegible] spreading *B. juncea*

Pods [illegible] rosette [illegible] nearly so, pedicels spreading [illegible]

Pods short, distinctly 4-angled, pedicels and [illegible] *B. nigra*

B. rapa Linn. Sp. Pl. 666, 1753. Bailey, Man. Cult. Pl. 436.

A tall, erect, branching annual. Stems often tinged with reddish purple, especially at the nodes. Leaves lyrate or pinnatifid, the upper decreasing in size. Flowers white or pale yellow, stalked. Pods slender, narrow.

The tender roots are cooked as vegetable and used as forage.

Local name: Shalgam, English name: Turnip.
Flowers and Fruits: Dec.-March.

B. oleracea Linn. Sp. Pl. 667, 1753; Bailey, op. cit. 435.

Flowers large, creamy yellow. Petals long-clawed.

Probably a native of Persia and the western parts of Asia. Found in India only in cultivation. The following varieties are grown in the State:

1. Var. **capitata** Linn. Sp. Pl. 667, 1753. Blatt. in JBNHS. 34: 297, 1930.

Native of Europe and Asia. Stems short and thick. Leaves closely packed into a large bud or head.

The cultivars Savoy Perfection, Drum Head, Golden Acre, Sugar Loaf, London Market, World Better and Copenhagen Market have given good results in the area and are available in the market from January to March.

English name: Cabbage.
Local name: Bandhagobhi.

2. Var. **botrytis** Linn. Sp. Pl. 667, 1753; Bailey, op. cit. 436.

Native of W. Europe. The head is formed of condensed and thickened flower clusters. The recommended cultivars in the State are Early London, Early Snowball and Large Whitetape. Available in the market during October and November.

English name : Cauliflower and Broccoli
Local name : Phoolgobhi

3. Var. **gemmifera** Zenker. Bailey, op. cit. [illegible]
Cultivated in Europe and Asia. Stems tall [illegible] developed into long heads. Available [illegible]
English name : Brussels Sprouts or Bud-bearing Cabbage
1757.

4. Var. **caulorapa** DC. Prodr. 1 : 214, 1824. Bailey, Stand. Cycl. 1
Native of Asia. Available from December to March.

Local name : Ganthgobhi, Knol-kohl

B. campestris Linn. var. **sarson** Prain in Dept. Land Rec. & Agr. Bengal Bull. No. 4: 24, ii. 5-7, 1898. FLGP 1 : 45.
An erect, tal, annual. Lower leaves large, lyrate-pinnatifid, upper smaller. Flowers bright yellow, in corymbs elongating in racemes. Pods various ; beak conical, stout. Seeds yellowish or brown.
A common cold season crop in the fields of Tarai, Nainital, Shahdara, and those near Ghaziabad. It is grown in rotation with [illegible] (*Sorghum vulgare* Pers.), Bajra (*Pennisetum typhoides* Stapf & C. E. Hubb.), maize (*Zea mays* Linn.), sugarcane (*Saccharum officinarum* L.) and edible legumes. The crop is harvested in April and May. The young parts of the plant make a favourite vegetable dish in the Punjab. Seeds are used for oil extraction. Old woody parts are used as fuel.

Local name : Sarson
Flowers and Fruits : Jan.-April
J. K. Maheshwari 789

B. tournefortii Gouan, Ill. 44, t. 20A. 1773. FBI 1 : 56 ; FLGP 1 : 46.
This species was collected by Jacquemont (in Duthie's FLGP loc. cit.) between Ajmer and Delhi. Commonly grown in the Punjab in the borders of fields (Zafar Alam in Ind. Jour. Agric. Sci. 15 : 173-18, 1945). I have not seen the plant growing in the field.
An erect, branching, hispid or glabrate annual, about 30 cm. tall. Radical leaves forming a rosette, runcinate-lyrate, lobes toothed. Flowers pale yellow. Pods erect, slender, glabrous, beaked.

Local name : Rai

B. juncea (Linn.) Czern. & Coss. Czern. Consp. Pl. Chark. 8 : n. 5, 1859. Coss. in Bull. Soc. Bot. France 6 : 669, 1859. Hook. f. & T. Anders. in FBI. 1 : 157, in part.
Sinapis juncea Linn. Sp. Pl. 668. 1753, excl. syn. Herm.
Brassica juncea Hook. f. & Thoms. in JLS. 5 : 170, 186[illegible] p.p. FLGP 1 : 44.
A tall, erect, branching annual, 90-150 cm. tall. Stems often [illegible]ged

with purple spots at the nodes. Leaves large, lower ones petiolate, lyrate or pinnatifid, the upper decreasing in size. Flowers yellow, 8 mm across. Sepals spreading. Pods narrow, torulose, straight, beak narrowly conical.

Cultivated for its seeds.

Local name : Raya
Flowers and Fruits : Dec.-March
J. K. Maheshwari 931

B. nigra Koch in Roehl. Deutschl. Fl. 4 : 713, 1833 ; FBI, 1 : 156 ; FLGP 1 : 44.

A rigid branching annual, 60-100 cm. high. Leaves petiolate; lower ones lyrate, upper entire. Flowers bright yellow in naked racemes. Pods subulate, appressed to the stem, torulose.

Cultivated for its seeds which are commonly known as 'Black Mustard' of commerce.

Local name : Poorbira.
Flowers and Fruits : Feb.-April
J. K. Maheshwari 1425

Eruca Adans.

E. sativa Mill. Gard. Dict. n. 1 1768 ; FBI 1 : 158.

An erect, branching annual. Leaves lyrate-pinnatifid, margins entire or coarsely toothed; petioles winged. Flowers whitish or yellow with darker veins, up to 2.5 cm. long. Petals clawed. Pods erect, appressed against the stems, oblong-ovoid, about 2.5 × 0.5 cm., beak about half the length of fruit, flat.

Cultivated as a cold season crop in the fields of Timarpur, Najafgarh, Shahdara and Ghaziabad with *Brassica campestris* var. *sarson* Prain, *Cicer arietinum* Linn., and *Hordeum vulgare* Linn. The oil from the seeds is used mainly for burning and probably adulterated with sarson oil. The plant is used for fodder.

Local name : Tara, Taramira
Flowers and Fruits : Feb.-March
J. K. Maheshwari 607 ; 804, fields near Faridabad

Lepidium Linn.

L. sativum Linn. Sp. Pl. 644. 1753 ; FBI. 1 : 159 ; FLGP 1 : 48.

An erect, glabrous annual. Radical leaves divided, cauline ones often entire. Flowers white or pinkish, small, in long racemes. Pods oblong-orbicular, notched, 2-seeded, 5 × 3.5 mm., valves margined.

Not grown as a crop but found as a weed of cultivation in the fields of cold weather crops.

Local name : Hala ; Tarala ; [illegible]
Flowers and Fruits : Feb.-May
J. K. Maheshwari 606

9. Capparidaceae (Capparaceae)

Herbs : fruit capsule [illegible]
Gynophore absent [illegible]
Gynophore present [illegible]
Shrubs or trees ; fruit a berry [illegible]
Sepals united at the base : fruit moniliform [illegible]
Sepals free : fruit globose or ovoid, but not moniliform [illegible]
Leaves simple ; stipular thorns present [illegible] the latter sometimes wanting [illegible]
Leaves trifoliolate ; large, unarmed tree [illegible]

Cleome Linn.

Stamens 6 ; capsules long-beaked, usually less than 1.5 cm long [illegible]
Stamens 12 or more ; capsules short-beaked, usually more than 2.5 cm long [illegible]

C. brachycarpa Vahl ex DC. Prodr. 1 : 240, 1824 ; FBI. 1 : 169 ; FJGP 1 : 50.

A strongly-scented, glandular, scabrous herb, 75 cm high, branching from the base. Leaves usually 3-foliolate. Leaflets 5-15 × 5-8 mm, obovate. Flowers yellow. Capsules long-beaked, about [illegible] × 0.4 cm, rough. Seeds smooth.

Common during the monsoon period in the crevices of the stairs of Suraj Kund, near Gurukul (Faridabad), often growing with *Tiedemannia indica* Kuntze, and *Herbascum chinense* Santapau. The plant gives a characteristic, musky odour.

Flowers and Fruits : July-Nov
J. K. Maheshwari 722

C. viscosa Linn. Sp. Pl. 672, 1753 ; FBI. 1 : 170 ; FJGP 1 : 50.

An erect, branching, glandular pubescent herb, 10-60 cm high. Leaves 3 to 5-foliolate, variable in shape. Flowers yellow, solitary axillary or in leaf bearing, terminal racemes. Stamens 17-20. Capsules [illegible] pubescent, erect, straight or subarched, short-beaked. Seeds dark brown [illegible] form.

It comes up soon after the first monsoon showers and is found on drying up sandy soils. A common weed in fields and waste places. The juice of the leaves is said to be used in ear troubles. The seeds are sold in the market.

Local name Hulhul
Flowers and Fruits July-Oct
J. K. Maheshwari 344

Gynandropsis DC. [illegible]

G. gynandra [illegible] Jahl Bot Geneve 17 [illegible] 9 4
[illegible] Linn. Sp. Pl. [illegible] 1753
[illegible] 1824 [illegible]

As erect or ascending glandular pubescent annual up to 60 [illegible] branching from the base. Leaves digitately 5-6 [illegible] leaflets 5-6 [illegible] cm. Flowers white, stamens coloured or pink. [illegible] polygamous in corymbose racemes. Capsules 4-8 [illegible] 3-0 5 cm.

A common weed of waste lands and cultivated fields. The plant [illegible] numerous variations and abnormalities in the structure of the flower. Besides the normal type of bisexual flowers there occur staminate ones with abortive or functional and stalked or subsessile ovaries. It is primarily a rainy season annual, but some plants continue to flower and fruit till late in the winter.

Local name Hulhul
Flowers and Fruits June-Sept.
J. K. Maheshwari 49

Maerua Forsk.

M. arenaria Hook. f. & Thoms. var. **scabra** Hook. f. & Thoms. in FBI 1 171. 1872. FUGF I 51

Niruhria oblongifolia Royle, Ill. 73, 1839.

A woody, pubescent, straggling shrub, climber or liana. Bark grey-white to dull black. Young shoots and leaves scabrous. Calyx soft pubescent. Flowers greenish-yellow. Berries monilform and deeply constricted between the seeds.

A liana climbing on the common trees of the Ridge. In the absence of proper support, it spreads on the ground. As a straggling shrub occurs often mixed with *Capparis sepiaria* Linn. Also common in waste places in dry, sandy soils.

Flowers and Fruits Late winter and summer seasons
J. K. Maheshwari 985

Capparis Linn.

Older branches leafless; flowers red . . . . . *C. aphylla*
Older branches leafy; flowers white . . . . . *C. sepiaria*

[illegible] Thorsk ; Edgew. in JLS. 6 : 184, 1862 ; Pax in Engl. & Prantl Nat. Pflam. 3(2) : 230, 231 ; F. 139, 1891.

Sodada urcelata Forsk. Fl. Aegypt. Arab. 81 : 116, 1775.

Capparis apiculata Roth, Nov. Pl. Sp. 248, 1821 ; Fl. [illegible] 51.

A leafless diffuse much-branched spiny [illegible] scrambling, twining or suffruticose. Thorns [illegible] recurved. Juvenile leaves [illegible] often produced in abundance on [illegible] Fruits [illegible] 1.5 cm., globose or ovoid, red when ripe. [illegible]

Common on the Ridge and in other dry parts [illegible] on the ground or hanging from the crevices of [illegible] with *Salvadora persica* Linn., *S. oleoides* Decne. [illegible] a thick woody stem or as a small tree about [illegible] high. [illegible] and young leaves are powdered and used by the [illegible] people as [illegible] pods, emptions and swellings. The flowers [illegible] and green [illegible] fruits are pickled. The fruits are sold in the market.

Local name : Karol, Kair, Karir, Dela
Flowers and Fruits : Jan.-Aug.
J. K. Maheshwari 9 , 714; 984

C. sepiaria Linn. Syst. 1071, 1759 ; FBI 1 : 177 ; FUGP 1 : 53 ; Parker For. Fl. 20.

A spreading, branched, diffuse or climbing shrub. Branches subflexuous. Thorns paired, recurved. Leaves 2.5-5 × 1.5-3 cm., oval-lanceolate or elliptic. Flowers white, in many-flowered terminal umbels. Berries deep purple, 0.7-1 × 0.7-1 cm., globose.

Very common and abundant on the Ridge as well as in other parts on dry situations. Also planted for hedges, especially along the fruit orchards. As a climber it is found on *Acacia leucophloea* Willd., *Ehretia laevis* Roxb., and other trees. The berries are sweet when ripe.

Local name : Heens
Flowers and Fruits : May-July
J. K. Maheshwari 273 , 374 ; 1208

Crataeva Linn.

C. nurvala Buch.-Ham. in TLS. 15 : 121, 1827 ; Blatt. & Mill. Beaut. Ind. Tr. 47, t. 9.

Capparis trifoliata Roxb. Hort. Beng. 41, 1814, nom. nud. & Fl. Ind. 2 : 571, 1832.

Crataeva religiosa auct. (non Forst).

An erect or crooked, medium-sized, unarmed deciduous tree branching high above the ground. Bark grey-white or ash-coloured. Leaves

[illegible] Leaflets [illegible] cm [illegible] ovate-lanceolate. Flowers greenish [illegible] below [illegible] Bracteoles [illegible]

[illegible] also planted in the Ridge where [illegible] the Ridge. [illegible] young plants are often met with.

[illegible] Flowers [illegible] Apr.-May. Fruits June-July.

J. K. Maheshwari 4[illegible]

10. Resedaceae

Oligomeris Cambessedes

O. linifolia (Vahl) Macbride in Contr. Gray Herb. (no. 53) 3: 9 [illegible]

Calyptrotis in Bull. Jard. Bot. Brux. Suppl. 24: 261. 1854.

Reseda linifolia Vahl in Hornemann, Hort. Hafn. 2: 50. 1814.

Oligomeris glaucescens Cambess. in Jacq. Voy. Bot. 24: t. 25. 1844, F.B.I. 1: 181; Fl. GP 1: 54.

An erect glaucous, much-branched annual, 15-30 cm high. Leaves hairy, [illegible] 2.5-5 × 0.2 cm. Flowers greenish; bracteoles in terminal dense-flowered spikes. Ovaries open at the apex. Capsules small, deciduous, 4-lobed. Seeds mucoy, shining.

Uncommon; collected once from the fields of Todapur near I.A.R.I.

Flowers and Fruits: Feb.-May.

J. K. Maheshwari 1406, Todapur

11. Violaceae

Hybanthus Jacq.

H. enneaspermus (Linn.) F. Muell. Fragm. 10: 81. 1877.

Viola enneasperma Linn. Sp. Pl. 937. 1753.

Ionidium enneasperma (Linn.) Vent. Jard. Malm. sub t. 27. 1803.

I. suffruticosum Gingg. in DC. Prodr. 1: 311. 1824.

I. heterophyllum Vent. Jard. Malm. 27. 1803; F.B.I. 1: 56.

The plant is included on the authority of Duthie in F.B.I. 1: 56. I have not seen any specimens from Delhi.

A glaucous or pubescent herb. Branches diffuse, woody. Leaves linear or lanceolate, serrate; stipules subulate. Flowers red, solitary. Pedicels variable, one with a long claw and a large ovate or orbicular limb. Seeds striate.

Local name: Ratanpurna

12. Flacourtiaceae

Flacourtia Comm. ex Juss.

F. indica (Burm. f.) Merr. Interpret. Herb. Amboin. 3 : 1917 & Enum. Philip. 1 : 12

Cinetana indica Burm. f. Fl. Ind. 132 : 1939 : 5 : 168

Flacourtia sepiaria Roxb. Pl. Cor. 1 : 48 : t. 65 : 1798.

F. ramontchi L'Herit. Sertp. 59 : t. 30 : 1786

F. farfona Cooke, Fl. Pres. Bomb. 1 : 56, 1901

A much-branched, thorny bush or small tree, the branches spinescent tipped with sharp, rigid recurved-like 1.5-4 cm. long spines. Leaves alternate, ovate-ovate or suborbicular, pubescent especially on the [illegible] of the cuneate at base, crenate-serrate. Stipules 4-5 short. Drupe purple, 7 mm. in diam.

Found on the New Delhi Ridge as well as on the [illegible] Mehrauli, growing alone or with *Capparis sepiaria* Linn. The fruit are edible and used as cooling medicine.

Local name : Khatai

Fruits : Summer

J. K. Maheshwari 825, near Faridabad, 1071, Kitchener Road 1152, Mehrauli

13. Polygalaceae

Polygala Linn.

Capsule hairy, carunele appendaged or not

Flowers pink, carunele 3-lobed — *P. chinensis*

Flowers yellow or mauve ; caruncle appendages absent — *P. erioptera*

Capsule glabrous ; caruncle minutely appendaged — *P. telephioides*

P. chinensis Linn. Sp. Pl. 704, 1753, FBI. 1 : 204, FUGP 1 : 62

A stout, diffuse, branching herb, 8-30 cm. long. Branches spreading or ascending. Leaves 1-2.5 cm. long. Flowers pink, pendulous. Capsules oblong, notched, ciliate on the margins. Seeds oblong, silky, strophiole 3-lobed.

Found during the monsoon period from the Jamuna River to the hilly tracts of Delhi, commonly on grassy lawns and grounds, often hidden amongst the grasses. The roots of *P. chinensis* Linn., *P. crotalarioides* Buch.-Ham., and *P. telephioides* Weild are said to contain saponin-like substances and were used as substitute for the Senega obtained from the American plant—*P. senega* Linn.

Flowers and Fruits : Aug.-Oct.

P. erinaceum [illegible] 156, 1824 ; FBI [illegible] 203 ; FUGP [illegible] 63

[illegible] annual herb, available in [illegible] [illegible] Flowers yellow [illegible] Stamens with [illegible] appendages [illegible] Wings [illegible] and on grassy [illegible] and [illegible] [illegible] hidden amongst the grasses. Var. *subhirsutum* (DC.) Cooke [illegible] collected from Delhi by Mukerjee (1938).

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 382.

P. triephoides Willd. Sp. Pl. 3 : 876, 1802 ; FBI 1 : 205 ; FUGP 1 : 63.

Roxb. in FUGP (loc. cit.) is the only authority for this species from India. I have not seen across any specimens of this plant.

A low, prostrate, perennial herb, 5-10 cm. high. Leaves obovate or oblong, margins usually recurved. Flowers fascicled on short extra-axillary peduncles. Wings herbaceous. Capsules broadly ovoid.

14. Caryophyllaceae

Sepals united	*Vaccaria*
Sepals free	
Styles free	
Stipules absent :	
Petals split to the base	*Stellaria*
Petals entire	*Arenaria*
Stipules scarious	*Spergula*
Styles connate, 3-fid or -dentate	
Sepals keeled on the back, fleshy	*Polycarpon*
Sepals not keeled, scarious	*Polycarpaea*

Vaccaria Medik.

V. pyramidata Medik. Phil. Bot. 1 : 96, 1789, Cufodontis in Bull. Jard. Bot. Brux. Suppl. 23 : 104, 1953.

Saponaria vaccaria Linn. Sp. Pl. 409, 1753 ; FBI 1 : 217, FUGP 1 : 64.

An erect, glabrous annual, 60 cm. or more tall. Leaves linear-oblong. Flowers pink. Calyx tubular, with five green nerves, swollen in fruit. Capsules ovoid. Seeds black.

A common winter season weed in grain fields and garden beds. Can serve as an ornamental herb for its beautiful flowers.

Flowers and Fruits : Feb.-March.

J. K. Maheshwari 609.

Stellaria Linn.

[illegible]edia (Linn.) Vill. Hist. Pl. Dauph. 3 : 645, 1789 ; FBI 1 : 230 ; FUGP 1 : 66.

Alsine media Linn. Sp. Pl. 272, 1753

An annual, decumbent, glabrous, branching beds [illegible] cordate. Flowers white, axillary [illegible] *Spergula arvensis* [illegible]

Local name : Safed-phul-kee Buchhucha ; Pan
Flowers and Fruits : Dec.-March
J. K. Maheshwari 569

Arenaria Linn

A. serpyllifolia Linn. Sp. Pl. 423, 1753 ; FBI 1 : 239 , FUGP , [illegible]

A small, decumbent or suberect, much-branched, tufted [illegible] Branches glandular throughout. Leaves 5-9 × 3-4 mm. ovate or [illegible] ovate. Flowers white, 3 × 3 mm., in many flowered cymes. Stamens 5-6; anthers pinkish or whitish. Styles [illegible] Capsules ovoid. Seeds black tubercled.

Less common than *Spergula arvensis* Linn. and *Stellaria media* Vill. Found as a weed in moist places towards the end of cold season.

Flowers and Fruits : Feb.-March

Spergula Linn

S. arvensis Linn. Sp. Pl. 440, 1753 ; FBI 1 : 243 , FUGP 1 : 67

A glabrous, diffuse branching annual. Leaves linear subulate in false whorls. Flowers white 4-5 mm. across. Stamens 10 in two whorls, anthers yellow. Styles 3, free to the base. Capsules ovoid, glabrous. Seeds black, shining.

Occurs as a winter weed in cultivated and fallow fields; found in moist localities.

Local name , Muchmuchia , Khandidal
Flowers and Fruits : Dec.-March
J. K. Maheshwari 573

Polycarpon Linn

P. prostratum (Forsk.) Pax in Engl. & Prantl, Nat. Pflanz. 3 (1b) : 87, 1889, Cufodontis in Bull. Jard. Bot. Brux. Suppl. 23 : 97, 1953

Alsine prostrata Forsk., Fl. Aegypt.-Arab. 207, 1775

Polycarpon loeflingii Edgew. & Hook. f. in FBI 1 : 245, 1874

P. depressum Rohrb. in Mart. Fl. Bras. 14 : 257, 1872 (non Nut. 1838).

P. indicum Merr. in Philip. Jour. Sci. (Bot.) 10 : 30, 1905 & Enum. 2 : 139

A prostrate, much-branched, glabrous or hairy herb. Leaves oppo- [illegible] small in [illegible] flowers [illegible] [illegible] shorter than the sepals [illegible] Sepals [illegible] [illegible]

Rare. Found in the pre-monsoon and monsoon period in very [illegible] ponds and puddles, often associated with *Polygonum* [illegible] which it resembles in appearance. It is distinguishable [illegible] which [illegible] flowered cymes, keeled sepals and [illegible] the latter [illegible] Also found hidden amongst bushes and tall grasses along the [illegible] dried canal banks of Najafgarh.

Flowers and Fruits : May-Oct.
J. K. Maheshwari 1219

Polycarpaea Lamk. nom. cons.

P. corymbosa (Linn.) Lamk. Tabl. Encycl. 2: 129, 1791 ; FBI. 1 : 245 ; FUGP 1 : 68 ; Merr. Enum. 2 : 139.
Achyranthes corymbosa Linn. Sp. Pl. 205. 1753.

An erect, much-branched, slender herb. Leaves c. 2.5 cm long, clustered, narrowly linear. Flowers white with a pinkish tinge, crowded on the cyme branches forming large silvery heads. Sepals chaffy, much exceeding the capsules. Capsules 3-valved.

Common on moist or dry, sandy-clayey soils of fallow and cultivated fields. It is said to be useful against acute fever.

Local name : Machechi ; Dholphuli
Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 333 ; 1299

15. Portulacaceae

Portulaca Linn.

Flowers solitary, terminal . . . . . . *P. quadrifida*
Flowers in terminal clusters :
  Flowers yellow . . . . . . *P. oleracea*
  Flowers rose-coloured . . . . . . *P. grandiflora*

P. quadrifida Linn. Mant. 1 : 73. 1767 ; FBI. 1 : 247 ; FUGP 1 : 70.

A prostrate, filiform annual, rooting at the nodes. Leaves subsessile, flat, succulent, ovate to ovate-lanceolate, much smaller than those of *P. oleracea* Linn. Stipular appendages with a ring of hairs. Flowers yellow, solitary, terminal. Seeds tubercled.

A common weed on moist soil in garden beds and fields where it spreads rapidly forming a carpet. The flowers open at noon.

Flowers and Fruits : [illegible]
J. K. Maheshwari [illegible] 349 [illegible]

P. oleracea [illegible] Sp. Pl. 445 [illegible]
[illegible]

Local name : Kulfa, Sahunak, Nunka
Flowers and Fruits : During the greater part of the year
J. K. Maheshwari 29

P. grandiflora Hook. in Bot. Mag. t. 2685, 1829 ; Bailey, Man. [illegible] Pl. 365

A succulent, prostrate or ascending glabrous herb. Branches many from the base. Leaves linear-lanceolate, borne all round the stem, very shortly petiolate, subterete. Flowers rose-purple or deep pink, in terminal, sessile clusters. Sepals 2, broad ovate. Petals 5, spreading, fan-shaped, notched. Stamens 10, anthers yellow, filaments purple. Style solitary, broader above. Stigmas 4, coiled or decurved. Seeds reniform, tuberculed, black.

Common on the Ridge during the monsoon period, spreading upon stones or growing under the shade of bushes. The flowers are attractive and the plant is grown as a pot herb.

Local name : Luma
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1245

16. Tamaricaceae

Tamarix Linn.

Leaf sheaths lacking ; flowers bisexual, in slender spikes ... *T. troupii*
Leaf sheaths present ; flowers bisexual or unisexual ;
  Shrubs ; flowers dioecious, in dense cylindrical spikes ; leaves and sheaths impressed-glandular ... *T. dioica*
  Trees ; flowers bisexual or unisexual, in lax racemose panicles ... *T. aphylla*

T. troupii Hole in Ind. For. 45 : 248, 1919 ; Troup, Silvic. Ind. Trees 1 : 16 ; Blatt. in JBNHS 34 : 305, 1930
T. gallica auct. (non Linn.)

A bushy shrub. Branches slender, articulated. Leaves minute, not sheathing, subulate. Flowers pink, bisexual, numerous, shortly pedicel-

[illegible] Sesuvium

[illegible] Sesuvium portulacastrum [illegible] the commonest plant [illegible] the [illegible] Khadar area [illegible] According [illegible] species [illegible] species [illegible] in India and [illegible] species [illegible] T. indica Linn. from the plains of West India is T. trianda Hole [illegible]

Local name : Nisu
Flowers and Fruits : Aug.-Sep.
J. K. Maheshwari 165

T. dioica Roxb. Hort. Beng. 22, 1814, nom. nud. & Fl. Ind. 2 : 41, 1832; FBI 1 : 249; FLGP 1 : 71; Parker, J. of Fl. 26.

A shrub 2-3 m tall, with spreading or decurving branches. Leaves minute, scale-like, appressed. Flowers purple or pink, dioecious, in axillary panicles, bracts panicled, 5-9 × 0.3-0.6 cm, spikes, bracts [illegible] ovular. Capsules oblong.

Found in low-lying areas and near the banks of Jamuna River and near Okhla Waterworks, dominating the vegetation. A graceful shrub when in full bloom.

Local name : Jhau
Flowers and Fruits : July-Oct.
J. K. Maheshwari 166

T. aphylla (Linn.) Lanza in Bull. Orto Bot. Palermo 8 : 82, 1909

Thuja aphylla Linn. Cent. Pl. 1 : 32, 1755.

Tamarix articulata Vahl, Symb. Bot. 2 : 48, t. 32, 1791; FBI 1 : 249; FLGP 1 : 72.

A glaucate-green, coniferous-looking tree, easily mistaken for *Casuarina*, fir or pine, attaining a height of about 6 m in the area. Trunk erect. Branches articulate at the base of sheath. Leaves shed, hing sheath and tooth with impressed glands. Flowers pink, loosely scattered on long, slender spikes arranged in loose panicles; bracts shorter than the flowers. Stamens 5. Capsules sessile, broadly ovate.

The tree has probably been planted in the area. Grows very well in the saline areas of Okhla.

Local name : Farash
Flowers and Fruits : June-Oct.
J. K. Maheshwari 176

17. Elatinaceae

Bergia Linn.

B. ammanioides Roxb. Hort. Beng. 34, 1814, nom. nud. & Fl. Ind. 2 : 457, 1832; FBI 1 : 251; FLGP 1 : 73, Merr. Enum. 3 : 102.

An erect [illegible] herb [illegible]

[illegible]

Among [illegible]

[illegible] *Sida rotundifolia* Linn. in [illegible] which [illegible] able by the [illegible]

Flowers [illegible] Dun-Ma
J. K. Maheshwari 565, Shahdara

18. Malvaceae

Herbs [illegible]

2 Fruits schizocarpic, the ripe carpels separating from the axis
  3 Bracteoles 0
    4. Carpels 5–10, 1-seeded
    4. Carpels many, 2-seeded — *Sida*
  3 Bracteoles 3 — *Abutilon*
    5 Leaves orbicular, palmately veined and lobed; flowers white — *Malva*
    5. Leaves ovate-lanceolate, pinnately veined; flowers yellow
  3 Bracteoles 5 or more; [illegible] — *Malvastrum*
    6. Leaves glandular at the base of the midrib beneath; bracteoles 5 — *Urena*
    6 Leaves eglandular; bracteoles 5–many — *Pavonia*
2 Carpels connate into a berry-like body, but later separating; flowers opening slightly — *Malvastrum*
2 Fruits capsular; [illegible]
  7 Ovary 10-celled; bracteoles 10 — *Decaschistia*
  7 Ovary 5-celled:
    8. Bracteoles 5 or more or 0
      9. Calyx persistent — *Hibiscus*
      9. Calyx falling off after anthesis — *Abelmoschus*
    8 Bracteoles 3, large, persistent — *Gossypium*
1 Trees; leaves cordate, ovate, entire or lobed — *Thespesia*

Sida Linn.

Procumbent, trailing herbs — *S. veronicifolia*
Erect, robust herbs or undershrubs
  Spiny tubercles present below the petioles — *S. spinosa*
  Spines absent:
    Awns short:

Leaves broadly obovate, hoary beneath, ped[illegible]ed peles [illegible] near the middle [illegible] *S. rhombifolia* var. *obovata*

Leaves ovate to lanceolate, [illegible] *S. grewioides*

As in preceding, the calyx, leaves downy on both surfaces [illegible] *S. cordifolia*

S. veronicifolia Lamk. Encyc. 1 : 5, 1783 ; FUGP. 1 : 80 ; Parker. For. Fl. 14.

A deep-rooted, rambling herb with several branches from the root stock, loosely hairy throughout. Leaves broad ovate to suborbicular, cordate, crenate-serrate, 2-4 × 2-3.5 cm. Flowers pale orange, about 1 cm across, usually solitary, axillary on long peduncles. Ripe carpels 5, smooth, shortly mucronate.

Common throughout, especially in moist, shady places and often hidden amongst grasses.

Flowers and Fruits : June-Oct.
J. K. Maheshwari 84 : 229

S. spinosa Linn. Sp. Pl. 683, 1753 ; FBI. 1 : 323 (excl. syn. *S. alnifolia* Linn.) ; FUGP. 1 : 80; Parker. For. Fl. 34.

S. alba Linn. Sp. Pl. 960, 1762.

A woody, much branched herb or undershrub. Stems and branches rough, with spiny tubercles at the nodes below the petioles. Leaves ovate to ovate-lanceolate, crenate-serrate, glabrous above. Flowers white. Ripe carpels 5, topped by two, erect, rough beaks.

Common in the village Vasilabgarh along the edges of cultivated fields and near canal banks. Also met on waste manure heaps in the University Compound.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1294

S. rhombifolia Linn. var. **obovata** Mast. in Hook. f. FBI. 1 : 324, 1874 ; FUGP. 1 : 81 ; Parker. For. Fl. 35.

Much-branched undershrub. Branches ascending. Leaves variable, broadly obovate or nearly orbicular, hoary beneath, base cuneate, margins toothed at least in the upper half. Flowers pale orange, axillary or clustered at ends of branches, peduncles jointed near the middle. Carpels usually 5, each shortly 2-awned.

Common in waste ground near gardens, open fields and along canal banks. Comes annually in the University Campus in the hedges of the Cricket Ground.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 401, 5.7, 13.3

S. grewioides Cunn. & Peer. Fl. Seneg. [illegible] FBI 1 [illegible] FLGP. 1 [illegible] 83 ; Parker For Fl 36

A hoary-tomentose undershrub [illegible] blade, crenate, downy [illegible] pels wrinkled, nearly [illegible]

Not common [illegible] and scattered [illegible] shade of bushes in hilly tracts, near edges of fields and in waste land [illegible]

Local name : Kharenti
Flowers and Fruits : Feb and Oct
J. K. Maheshwari 808 [illegible] 327

S. cordifolia Linn. Sp. Pl. 684. [illegible] FBI 1 [illegible] FLGP 1 [illegible] Parker

A robust herb or small diffuse shrub, much branched from the base. Leaves ovate, cordate, crenate-serrate, stellate-hairy on both [illegible] Flowers white or pale yellow. Peduncles jointed near the flower. Ripe carpels 5, 4 × 2 mm. (excluding awns), each 2 awned, awns exceeding the calyx.

Common all over the area during the monsoon and post-monsoon period, along field borders, in hedges, along roadsides and in waste ground on damp, sandy soils. The seeds are used in leucorrhoea, spermatorrhoea and gonorrhoea.

Local name : Kharenti ; Bujband
Flowers and Fruits : Sept.-Dec.
J. K. Maheshwari 351

Abutilon Gaertn.

Carpels 15 or more
  Carpels exceeding the calyx, awned
    Peduncles usually longer than the petioles ; carpels reniform . . . . . *A. indicum*
    Peduncles shorter than the petioles ; carpels oblong . . . . . *A. bidentatum*
  Carpels shorter than the calyx, awnless . . . . . *A. glaucum*
Carpels less than 15 . . . . . *A. ramosum*

A. indicum (Linn.) Sweet, Hort. Brit. 54. 1827 ; FBI 1 326 ; FLGP 1 : 83 ; Parker, For. Fl. 37 ; Metr. Enum. 3 : 32.
Sida indica Linn. Cent. Pl. 2 : 26, 1756.

A robust shrub or undershrub. Branches many. Leaves ovate to orbicular-cordate, soft. Flower buds drooping. Flowers orange-yellow, on long pedicels. Ripe carpels 15-20, black at maturity, reniform short-beaked. Seeds black, tubercled.

Common all over the area in hedges of gardens and in waste places. The flowers open at noon.

Local name : Kanghi, Aphin
Flowers and Fruits : Major part of the year.
J. K. Maheshwari 74

A. indentatum (Hochst. ex A. Rich. Tent. Fl. Abyss. 1 : 68, 1847 : FBI 1 : 326 : Parker : Ind. For. 46 : 23, 1920

Dr. Parker does not describe this plant as fairly common, but I have not collected any specimens myself.

An erect perennial. Leaves cordate-ovate, downy on both surfaces. Peduncles axillary. Ripe carpels 20, smooth, exceeding the calyx, awns spreading.

A. glaucum (Cav.) G. Don. Gen. Syst. 1 : 304. 1831

Sida glauca Cav. Ic. 1 : 8, t. 11. 1791

Abutilon muticum G. Don. Gen. Syst. 1 : 302. 1831 ; FBI 1 : 327 : Parker in Ind. For. 46 : 23. 1920

Parker has cited this as the only authority who collected this plant from one spot on the Delhi Ridge. I have not seen it in the field.

Annual or suffrutescent. Leaves roundish-cordate, tomentose on both surfaces. Flowers large, orange. Fruits globose. Carpels about 20, awnless, shorter than the calyx.

A. ramosum Guill. & Perr. Fl. Senег. Tent. 1 : 68, 1831 ; FBI. 1 : 328 : FoCP 1 : 85 : Parker For. Fl. 38.

A small shrub. Branches downy with thin, spreading hairs. Leaves ovate, cordate, crenate-serrate. Flowers yellow. Ripe carpels about 10 with spreading awns.

Rare.

Fruits : Feb.

J. K. Maheshwari 842, near Qutab.

Malva Linn.

Flowers dark purple or violet, corolla 3 to 4-times the length of the calyx ..... *M. sylvestris*

Flowers white, corolla scarcely longer than the calyx ..... *M. parviflora*

M. sylvestris Linn. Sp. Pl. 689. 1753 : FBI 1 : 320

An erect glabrous herb. Leaves orbicular-lobed, petioles as long or longer than the leaves. Flowers dark purple or violet, about 2.5 cm. across, on pedicels shorter than the petiole. Petals notched.

A rare weed in waste places.

Flowers and Fruits : Cold season.

J. K. Maheshwari 1424

M. parviflora Linn. Amoen. Acad. 3 : 416. 1787 : FBI 1 : 321 ; FUOP 1 : 79

A spreading dec[illegible] nbent or nearly erect [illegible] reddish. [illegible] small in axillary [illegible] bracteole [illegible] Flowers [illegible] have exceed [illegible] sepals [illegible] carpels [illegible] during the [illegible] season [illegible] control with [illegible] weeds. The [illegible]

Flowers and Fruits : Feb March
J. K. Maheshwari 626

Malvastrum Gray nom. cons

M. coromandelianum (Linn.) Garcke in Hongbamba [illegible] 85 [illegible] M
[illegible]
Malva coromandeliana Linn. Sp. Pl. 682, 1753
Malvastrum tricuspidatum A. Gray, Pl. Wright I [illegible] 16, 1852, Fl. Jal
121, FUGP I, 79.

An erect, suberect or ascending, branching, stout he[illegible] tall, appressed-hairy. Leaves ovate to ovate-lanceolate [illegible] Flowers yellow. Bracteoles 3. Calyx lobes triangular [illegible] 12 ventform, with three, projecting points.

A common weed in waste places and fields [illegible] undergrowth in fruit orchards.

Local name : Kharenti
Flowers and Fruits : Major part of the year
J. K. Maheshwari 111

Urena Linn

U. lobata Linn. Sp. Pl. 692, 1753, FBI. I : 329 (excl. syn. *U. palmata*
FUGP I : 85, Parker, For. Pl. 39
U. sinuata Linn. Sp. Pl. 692, 1753.

An erect, shrubby herb, up to 1.2 m. high. Stems and branches densely woody. Leaves variable 5-9 × 4-6 cm., entire or slightly lobed, nerves prominent beneath, 3 glands present at base of lamina. Flowers bright pink with a darker centre. Carpels armed with hooked bristles.

Common in fruit orchards and near stagnant water.

Local name : Vayu san
Flowers and Fruits : June-Oct.
J. K. Maheshwari 114, 487

Pavonia Cav. nom. cons

P. zeylanica Cav. Diss. 3 : 134, 1787, FBI. I : 331

An erect, sticky herb, 60-150 cm. tall, branching from the base. Leaves undivided or 3-lobed, dentate. Flowers pink or rosy, erect, on

[illegible] long petioles. Flowers [illegible] solitary. Rare carpels pale brown, [illegible] [illegible] winged. 3 × 5 mm.

Ridge: [illegible] on the Ridge in shallow depressions, [illegible] the shade of trees and also on the [illegible] of Mehrauli. Also found along the [illegible] the hilly [illegible] on loamy soil.

Flowers and Fruits: June-Nov.

J. K. Maheshwari 1290, 1294.

Malvaviscus Dill.

M. conzattii Greenm. in Publ. Field Mus. Nat. Hist. Chicago (Bot.) 2: 333, 1912.

A shrub. Leaves ovate, entire or crenate-serrate. Bracteoles 7 or more. Flowers red or orange-red, on axillary peduncles, opening slightly at the top. Petals erect. Staminal column exserted.

Commonly grown in hedges of gardens and near houses for its beautiful hibiscus-like flowers.

Flowers: Major part of the year.

J. K. Maheshwari 583, Nicholson Gardens, 588.

Decaschistia Wt. & Arn.

D. crotonifolia Wt. & Arn. Prodr. 52, 1834; Royle, Ill. 83; FBI. 1: 372; FL GP. 1: 86; Parker, For. Fl. 39.

Royle (loc. cit.) mentions the occurrence of this plant near Delhi. I have not seen any specimens from the district.

Leaves about 10 × 5 cm., ovate or slightly lobed, velvety on both surfaces with short, dense tomentum, whitish beneath. Bracteoles nearly as long as the calyx. Capsules slightly hispid. Seeds glabrous.

Hibiscus Linn.

Calyx red, fleshy, edible . . . . . *H. sabdariffa*

Calyx not so

Plants prickly

Bracteoles with a leaf-like appendage at the apex . . . . . *H. surattensis*

Bracteoles without appendages . . . . . *H. cannabinus*

Plants not prickly

Bracteoles usually absent or minute; flowers white . . . . . *H. lobatus*

Bracteoles present, free or connate:

Bracteoles connate into a cup at the base; seeds thinly pilose . . . . . *H. ithaceus*

Bracteoles free [illegible]

Flowers up to [illegible] cm [illegible]

Flowers [illegible] seeds hairy [illegible]

Petals deciduous [illegible]

Petals [illegible] lobed [illegible]

Flowers red [illegible]

Flowers white, rose, purple [illegible]

Flowers white, turning red [illegible]

Flowers [illegible] purple or purplish [illegible]

H. sabdariffa Linn. Sp. Pl. 695, 1753 ; Duthie & Fuller [illegible] Crops 1 30 ; Metr. Enum. 3 [illegible]

An erect, glabrous shrub or small tree. Prickle [illegible] often reddish. Lower leaves undivided, upper palmately [illegible] Flowers yellow with a dark, crimson eye. Sepals [illegible] fleshy [illegible]. Capsules ovoid, pointed, shorter than calyx.

Native of W. Indies. Cultivated mainly for its succulent, edible calyx.

English name : Roselle ; Red sorrel

Flowers and Fruits : Dec.-March

J. K. Maheshwari 784

H. surattensis Linn. Sp. Pl. 696, 1753 ; Royle, Ill. 33 ; FBI. 1 334 ; FUGP 1 88

Royle (loc. cit.) is the only authority who reports this species from near Delhi.

An undershrub. Stems herbaceous, erect or subscandent, with scattered prickles. Leaves roundish, deeply palmately 3 to 5-partite. Flowers yellow with a dark centre. Bracteoles 10-12, linear with a leaf like appendage at the apex. Capsules ovoid, hairy. Carpels 3-awned. Seeds with stiff, yellowish hairs.

H. cannabinus Linn. Syst. 1149, 1759 ; FBI. 1 339 ; FUGP 1 90.

An erect, prickly shrub, 1.8-3 m. tall. Leaves deeply palmately lobed, lobes distantly serrate ; petioles prickly. Flowers pale yellow with a crimson centre. Bracteoles 7-10. Sepals each with a gland at the back. Capsules globose, pointed, bristly.

Cultivated for its fibre during the rainy season. Usually grown with other crops or in hedges of cultivated fields. The fibre is used for making ropes. The bristles of the capsule are irritating.

Local name : Patsan ; San

Flowers and Fruits : Sept.-Nov.

J. K. Maheshwari 398

H. lobata Mor. [illegible] Kuntze Rev. Gen. 1 [illegible] 1891 Hum. [illegible] JB [illegible]

[illegible] Solanum lobatum Mor. in Comm. Gotting. 6 24 t [illegible] 785

Hibiscus urticifolius L. Herit. St. F. [illegible] 133 t. 49. 1786 FB I 336

A [illegible] annual 30 cm. or more [illegible] Leaves [illegible] [illegible] Flowers white [illegible] Sepals [illegible] Capsules not exceeding the calyx Seeds blackish [illegible]

Rare in the Ridge during the monsoon, put up under the shade of bushes and in ground depressions.

Local name Faridkoote

Flowers and Fruits Sept. Oct.

J. K. Maheshwari 371 768 Ridge

H. tiliaceus Linn. Sp. Pl. 694, 1753 ; FBI I : 343, Merr. Enum. 3 39

A large shrub or small tree. Leaves roundish-ovate or nearly orbicular somewhat abruptly acuminate hairy beneath. Flowers yellow or pale, tubular, deeply about 10-cleft.

Planted in gardens

J. K. Maheshwari 1134

H. micranthus Linn. f. Suppl. 308, 310, 1781 ; FBI. I : 335 , FUGP I 89 Parker For. Fl. 40

An erect, shrubby plant, branching from base or often unbranched, 1-3 m. tall. Stems greenish-yellow or whitish. Leaves variable in shape. Bracteoles filiform. Flowers white fading to rosy purple. Calyx persistent. Capsules globose.

Common in the hilly tracts in the crevices of rocks, or amongst bushes of *Capparis sepiaria* Linn. and other shrubs. The fruit is edible.

Local name : Okda

Flowers and Fruits July-Oct.

J. K. Maheshwari 207

H. schizopetalus (Mast.) Hook. f. in Bot. Mag. t. 6524, 1880 Bailey, Man. Cult. Pl. 665 , Bor & Raiz. 236, f. 136, Pl. 87

H. rosa-sinensis Linn. var. *schizopetalus* Mast. in Gard. Chron. 282, 1879

A large glabrous shrub with drooping branches. Flowers light scarlet red or purpish-red, pendulous on long peduncles. Petals deeply laciniate. Staminal column long-exserted.

Native of Trop. Africa. Grown in gardens for its beautiful flowers

Flowers : Aug.-Nov.

J. K. Maheshwari 1326

H. rosa-sinensis Linn. Sp. Pl. 694, 1753 ; FBI. I 344 , Bailey, loc. cit. , Bor & Raiz. 237, f. 137 Pl. 88, 89

An evergreen [illegible] 3 m tall. Leaves [illegible] stipules [illegible] Flowers red [illegible] Stamens [illegible] the corolla.

[illegible] grown [illegible] for its large [illegible] flower. The flowers were used [illegible] the English name [illegible] flower. Variety *rubro plena*. Seeds [illegible] cultivated in the den

Local name : Gudhal
Flowers : Feb-Oct
J. K. Maheshwari 1194

H. mutabilis Linn. Sp. Pl. 694, 1753 ; FBI 1 : 344 ; Bailey Man [illegible] Pl. 666 ; Bor & Raiz. 234, f. 135, Pl. 86.

A large, bushy, tomentose shrub. Leaves broad ovate [illegible] 1 to 5-lobed ; lobes triangular, acute or acuminate, shallow [illegible] dentate. Flowers [illegible] clustered at tips.

Grown in the hedges of gardens.

Flowers : Jan.
J. K. Maheshwari 1203

H. syriacus Linn. Sp. Pl. 695, 1753 ; FBI 1 : 344 ; Bailey, loc. cit. ; Bor & Raiz. 238, f. 138, Pl. 90, 91.

An erect, glabrous, bushy shrub, 120-150 cm or more. Leaves wedge-shaped ; stipules linear-lanceolate. Flowers rose or purple, often double. Bracts 10, free almost to the base.

Native of Syria. Grown in gardens for its handsome, pretty, rose-like flowers.

Local name : Gulhar
Flowers : Feb.-Oct.

Abelmoschus Medik.

A. esculentus (Linn.) Moench, Meth. 617, 1794 ; Merr. Enum. 3 : 40.
Hibiscus esculentus Linn. Sp. Pl. 696, 1753 ; FBI 1 : 343 ; FLGP : 93.

An erect, coarsely hairy herb. Leaves cordate, 3 to 5-lobed, scabrous. Flowers large, yellow with crimson centre. Capsules ribbed. Seeds round.

Cultivated during the rainy season in gardens and fields for the sake of its edible fruit, which is variously prepared as a favourite vegetable. The young pods make good pickle.

Local name : Bhendi
Flowers and Fruits : June-Oct.
J. K. Maheshwari 1325

Bracteoles quite free, pectinate [illegible]

G. herbaceum L. Sp. Pl. 693, 1753 ; FBI 1 : 346, in part ; FUGP [illegible]

A [illegible] shrubby, hairy plant. Stems woody [illegible] Flowers large [illegible] Bracteoles [illegible] large, entire or toothed [illegible] Capsules [illegible] pointed [illegible]

Local name : Bari
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1423

G. arboreum Linn. Sp. Pl. 693, 1753 ; FBI 1 : 347 ; FUGP 1 : 95.

A shrubby, pilose plant. Leaves palmately 5 to 7-lobed, more or less [illegible] ng above than in *G. herbaceum* Linn. Flowers purple or vel[illegible]w with a [illegible] centre. Bracteoles united, shortly toothed. Cap[illegible] pointed.

Cultivated in the area during the monsoon period.

Flowers and Fruits : Oct.
J. K. Maheshwari, cultivated

G. hirsutum Linn. Sp. Pl. 975, 1763 ; Haines, Bot. Bih. & Or. 73 ; Merr. Enum. 3 : 43.

A coarse, much-branched bush, clothed with woolly hairs. Leaves simple to 5-lobed, thick ; lobes short, triangular ; base cordate. Flowers yellow turning to pink-purple, without a dark centre. Bracteoles quite free. Capsules spherical. Seeds with a greyish rusty or green fuzz.

Cultivated during the rainy season.

Local name : Bari
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari, cultivated

Thespesia Soland. ex Corr. nom. cons.

T. populnea (Linn.) Soland. ex Corr. in Ann. Mus. Par. 9 : 290. 1807 ; FBI 1 : 345 ; Blatt. & Mk. Beaut. Ind. Tr. 141, t. 31.

Hibiscus populneus Linn. Sp. Pl. 694, 1753.

A small tree. Leaves pale green, cordate, quite entire, long petiolate. Flowers yellow turning mauve. Staminal tube toothed at the top.

Found occasionally in gardens.

19. Bombacaceae

Leaflets entire; trunk not bottle-shaped
Leaflets dentate; trunk bottle-shaped — *Chorisia*

Salmalia Schott & Endl.

S. malabarica (L.) Schott & Endl. Meletemata 35, 1832; Bentham, Trans. Linn. Soc. 23: 1, 1860; Stuart, Gamble, Fl. Sylhet 1(1): 24, 1953; Blatt & Millett, Bomb. Nat. Hist. Soc. Fl. 23: 1, 1936.

Bombax malabaricum DC. Prodr. 1: 479, 1824; FBI 1: 349; FUOP 98.

A large, handsome deciduous tree forming a spreading crown. Leaflets 5-7, lanceolate, glabrous. Flowers large, bright red. Capsule woody. Seeds enveloped in copious floss.

Planted in parks, squares and gardens in New Delhi. The calyx of the flower buds is eaten as vegetable. The floss surrounding the seeds is used commonly for stuffing pillows and mattresses.

Local name : Semal ; English name : Silk-cotton tree.
Flowers : Feb.-March ; Fruits : April-May.
J. K. Maheshwari 1447.

Chorisia H. B. & K.

C. speciosa St. Hil. Pl. Us. Bras. t. 63, 1827; Bailey, Stand. Cycl. Hort. 1: 752; Bor, Man. Ind. For. Bot. 164.

An introduced handsome tree with a striking appearance. Trunks bottle-shaped, green, covered with conical-shaped prickles. Leaflets digitate, lanceolate, dentate.

Some trees have been planted in the lawns of Prime Minister's House, New Delhi.

English name : *Floss-silk tree*.

20. Sterculiaceae

Flowers unisexual or polygamous ; petals absent
Leaves cordate-ovate ; follicles woody, globose ; seeds winged — *Pterygota*
Leaves simple, lobed or digitate ; follicles usually coriaceous, oblong ; seeds not winged — *Sterculia*
Flowers bisexual ; petals present
Fruit of spirally twisted follicles . . . . . *Helicteres*

Fruit a capsule
Flowers on axillary 1 or few flowered peduncles — *Pterospermum*
Trees or shrubs. Flowers white — *Melhania*
Shrubs. Flowers yellow — *Abutilon*
Trees or shrubs. Flowers purplish
Flowers clustered, panicled or corymbose — *Dombeya*
Trees or shrubs. Staminodes present — *Melochia*
Herbs or undershrubs. Staminodes absent

Pterospermum Endl.

P. acerifolium (Roxb.) R. Br. in Benn. Pl. Jav. Rar. 234, 844. Bedd. Trees, t. 10.

Sterculia acerifolia Roxb. Pl. Cor. 2: 64, t. 287, 1820; FBI 1: 366.

A large tree. Leaves large, up to 25 × 20 cm., entire or obscurely 3-lobed, 7-nerved. Flowers in short, rusty-tomentose racemes. Follicles woody, nearly globose.

Grown as an ornamental tree in gardens.

Flowers: March-April. Fruits: June-July.

J. K. Maheshwari 969

Sterculia Linn.

Inflorescence and fruits with stinging hairs . . . . . *S. urens*
Inflorescence and fruits glabrous or hairy but without stinging hairs . . . . . *S. trichosiphon*

S. urens Roxb. Pl. Cor. 1: 25, t. 24, 1795; FBI 1: 355; FUGP 1: 100. Parker in Ind. For. 46: 23, 1920.

Parker (loc. cit.) reports this plant from near Delhi and he is the only authority for the inclusion of the plant in this flora.

A moderate-sized, soft-wooded tree. Leaves crowded at the ends of the branches, cordate, large. Flowers greenish-yellow, mostly male, in terminal panicles. Stamens 15-20, united into a column. Follicles 5, woody, red when ripe. Seeds dark brown. The whole inflorescence and particularly the fruits are covered with stinging hairs.

S. trichosiphon Benth. Fl. Austral. 1: 229, 1863; Parker, For. F. 45.

A small or medium-sized tree. Bark white. Leaves 0·20–0·30 cm., more or less deeply cut into 5-7, palmate lobes with acuminate tips, glabrous, crowded at the ends of branches. Racemes short. Follicles glabrous, shortly stipitate.

Planted in gardens for its graceful foliage.

Helicteres Linn.

H. isora L. Sp. Pl. 963, 1753; FBI 1: 365; FUGP 1: 102; Parker in Ind. For. 46: 23, 1920.

[illegible]

Pterospermum [illegible]

P. acerifolium [illegible]

[illegible] Moochkund Kanakchampa [illegible] Jaiti Jaiti Jaiti Jaiti Jaiti Jaiti [illegible]

Melhania [illegible]

M. futteyporensis Munro ex Mast. in FBI 1 : 373, 1874 ; Blatt. in JBNHS 34 : 883, 1931 ; Parker For. Fl. 47.

M. tomentosa Stocks ex Mast. in FBI. 1 : 373, 1874 ; FUGP 1 : 106.

Parker (loc. cit.) has united *M. tomentosa* Stocks ex Mast. with *M. futteyporensis* Munro ex Mast. because the distinction between the two is based on [illegible] which however vary considerably and [illegible] therefore form a reliable basis for classification. Haines in Duthie's FUGP 1 : 106, is the only authority who collected this species from Deoli. I have not seen the plant in the field.

A coarse, pubescent or hoary-tomentose shrub. Leaves oblong, cordate, crenate-serrate. Flowers in terminal cymes, 2.5 cm across. Capsules villous. Seeds muricate.

Abroma Jacq.

A. augusta (L. nom. L. nom.) L. Suppl. 341, 1781 (*Ambroma*) ; FBI 1 : 375 ; FUGP 1 : 108 ; Merr. Enum. 3 : 48.

Theobroma augusta Linn. Syst. 233, 1767.

A large shrub or small tree. Leaves repand-denticulate. Flowers 5 cm across, axillary. Capsules three as long as the persistent calyx, glabrous.

Grown occasionally in gardens.

Local name : Ulatkamba.

Dombeya Cav. nom. cons.

Leaves cordate, stellate-pubescent ; flowers pure white ; *D. natalensis*

[illegible] *D. [illegible]*
[illegible] *D. [illegible]*
[illegible] *D. [illegible]*

D. [illegible] [illegible] Bailey, Man. Cult. P. 669.
A shrub [illegible] Leaves [illegible] Flowers large, sweet-scented, [illegible] arrangement, [illegible]-shaped.
Planted in gardens.

D. mastersii [illegible] Hook. f. in Bot. Mag. 95, t. 5810 (1869). Parker, For. F. 48.
A [illegible] with spreading tops. Leaves [illegible] Flowers fragrant, [illegible] umbellate.
Native of Trop. Africa. Grown in gardens.

Flowers: April.
J. K. Maheshwari 1196.

D. cayenne Hort.: Bailey, Man. Cult. Pl. 669.
A hybrid of *D. mastersii* Hook. f. and *D. wallichii* Jack. Flowers beautiful, pink, in pendulous, many-flowered umbels.
Planted in gardens.

D. acutangula Roxb. Hort. Bengal. 123, t. 38, f. 2, 1787; Bailey, Stand. Cycl. Hort. 3: 1065.
A shrub or small tree. Leaves crowded at the ends of branches, nearly glabrous. Flowers white or reddish, in cymes; bracteoles large, ovate. Ovary villous.
A garden shrub.

Flowers: Sept.-Oct.
J. K. Maheshwari 1201.

Melochia Linn.

M. corchorifolia Linn. Sp. Pl. 675, 1753. FBI 1: 374; FUGP 1: 107.
A stout, much-branched herb or undershrub. Branches suberect or ascending. Leaves variable in size and shape; base 5-nerved. Flowers pinkish, in dense terminal or axillary clusters, intermixed with several bracteoles. Capsules globose, hispid. Seeds angular.
Found near canal banks in the shade of bushes. Rather rare in the area.

Flowers and Fruits: Sept.-Oct.
J. K. Maheshwari 500.

31. Tiliaceae

Trees or shrubs; fruits drupaceous.

[illegible] *Grewia*

Herbs [illegible]

Capsules [illegible]

Fruits [illegible]

Grewia [illegible]

Flowers [illegible]

Sepals [illegible]

Sepals [illegible]

Flowers [illegible] G. [illegible]

G. flavescens Juss. in Ann. Mus. Par. 4 : 91, 1804 [illegible] 34 : 868, 1911

G. villosa Wt. & Arn. (all or [illegible] Lamk.)

A shrub [illegible] light brown [illegible] hairs on branchlets, petioles, [illegible] and inflorescences. Leaves 5-10 × 1.5-5 cm., oblong or ovate, [illegible] subtuse. Peduncles 3-flowered. Buds hirsute, oblong, dilated at the base. Ovaries hirsute; stigmas 4-dentate.

Not common in the area. Some plants are found on the New Delhi Ridge. Rare on the Old Delhi Ridge.

Flowers: Oct.

J. K. Maheshwari 1163, New Delhi Ridge.

G. asiatica L. sp. Mant. 1 : 22, 1767; FBI. 1 : 386; FUGP 1 : 113; Parker, For. Fl. 55.

A middle-sized, crooked tree with a spreading crown. Bark grey, [illegible] white. Leaves 8-20 × 8-12 cm., variable. Peduncles in fascicles of 2-8, usually 3-flowered. Drupes dark purple, more or less globose, [illegible] Nuts 1-2; ripe pulp sweet and acidic.

An introduced tree. Grown in gardens for its edible fruits which are sold in the market during the summer months; the pulp is made into a sherbat and used as cooling drink. The young parts are attacked by a disease and result in an aggregation of leaves.

Local name : Phalsa

Flowers and Fruits : June-July

J. K. Maheshwari 200, 1105, 1751, Kingsway Camp Police Gardens.

G. tenax (Forsk.) Fiori, Bos. Piante legn. Eritrea 246, 1909; F. W. Andr. Fl. Pl. Anglo. Egypt. Sud. 1 : 222.

Chadara tenax Forsk. Fl. Aegypt.-Arab. 105 & 114, 1775.

Grewia populifolia Vahl, Symb. Bot. 1 : 33, 1790; FBI. 1 : 385; FUGP 1 : 111.

G. betulaefolia Juss. in Ann. Mus. Par. 4 : 92, 1804.

A much-branched shrub, up to 3 m. tall. Stems and branches whitish-grey to grey. Leaves irregular in shape, subcoriaceous. Flowers about 2 cm. long. Buds oblong. Drupes 2 to 4-lobed, orange red

[illegible]

Local name : Chabie Rauchhana Kurra [illegible]
Flowers : July-Aug Fruits : Oct
J. K. Maheshwari 1198

Corchorus [illegible] C. depressus

(Perennial woody herbs capsules cylindric
Erect all the herbs rarely perennial)
Capsules [illegible] dical
Capsules ending in a single beak fixed at the top
Capsules ribbed, glabrous beak long C. olitorius
Capsules 3 to 4-angled, scabrous beak short C. trilocularis
Capsules ending in 3 radiating points
Capsules 6-angled, 3-winged, short, stout C. acutangulus
Capsules cylindric, not winged, long, slender C. capsularis
Capsules depressed globose

C. depressus (Linn.) Stocks in Proc. Linn. Soc. [illegible] 367 848 F. W. Anur op. cit. 217
Antichorus depressus Linn. Mant. 64 767
Corchorus antichorus Raeusch. Nom. Bot. 158. 1797 ; FBI. I 398 ; F. GP. I 128

A prostrate deep-rooted, much-branched, perennial herb. Leaves [illegible]. Flowers yellow. Capsules cylindric, straight or curved, 4-valved.

Found in the drier parts and hilly tracts of Gurgaon, Mehrauli and other places on sandy-clayey or gravelly soils and waste places, forming a green turf at some spots. Also seen in demolished ancient buildings of Delhi. The plant is sold in the bazaars. It is used for the treatment of gonorrhoea and an extract is applied as a paste in healing of wounds.

Local name : Khurand ; Bohphali
Flowers and Fruits : Feb.-Aug.
J. K. Maheshwari 827

C. olitorius Linn. Sp. Pl. 529. 1753. FBI. I 397 ; FUGP. I 120

An erect shrubby plant. Stems very fibrous. Leaves up to 15 × 7 cm., the base two serratures produced into filiform appendages. Peduncles 1 to 3-flowered. Flowers yellow.

Found in moist shady places in fallow and cultivated fields.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1305

C. trifoliularis [illegible]

[illegible]

Local name : [illegible]

Flowers and Fruits : [illegible]

K. Maheshwari [illegible]

C. sessilis Linn. Syst. 1079 1759 from Forsk. Sonapu in Rhizo 6(1) 3 1953

C. [illegible] Lamk Encycl. 2 104, 1786 FBI. 1 : 398 FUGP [illegible]

An ascending, suberect or erect, hairy annual. Leaves [illegible] Flowers yellow, peduncles 2 to 3-flowered. Common in fallow and cultivated fields. Also found on the Rajgir waste localities and along the hedges of gardens.

Local name : Chunch

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 349, 1274

C. tridens Linn. Mant. 566, 1771 FBI 1 : 398 FUGP [illegible]

A suberect or erect annual, branching from the base. Leaves [illegible] lanceolate or linear-oblong. Flowers yellow, on leaf-opposed 1 to 4-flowered peduncles. Capsules 2.5-5 cm. long.

Common in cultivated fields and waste places on moist soil.

Local name : Kowwa-torai

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 370, 1275

C. capsularis Linn. Sp. Pl. 529, 1753, FBI. 1 : 397, FUGP 1 : [illegible]

An erect or suberect, glabrous annual. Leaves ovate-lanceolate, the two lowest serratures produced into awns. Flowers yellow. Capsules ridged and muricated.

Found along field hedges and along canal banks, used for making ropes.

Local name : Kharenti

Flowers and Fruits : Sept.-Oct.

J. K. Maheshwari 474

Triumfetta Linn.

T. rhomboidea Jacq. Enum. Pl. Carib. 22. 1760 ; FBI 1 : 395 ; FUGP 1 : 218

[illegible]

I. hederacea Linn. Syst. 1044 (1759) [illegible]

An erect or semi-erect [illegible] herb [illegible] branched. [illegible] in shape [illegible] of wood [illegible] the base [illegible] of lamina [illegible] with a few [illegible] glands near the base of lamina [illegible] glabrous, clothed with [illegible] hairs, [illegible] fruits glabrous, clothed with [illegible] hairs [illegible] in clusters [illegible] in dense [illegible]

[illegible] on the Ridge [illegible] shrubs under the shade of trees. [illegible] also in cultivated fields [illegible] waste places.

Local name : Kasu
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1128

22. Linaceae

Linum Linn.

L. usitatissimum Linn. Sp. Pl. 277, 1753 ; FBI. 1 : 410 ; FUGP. 1 : 122.

An erect annual, 60 cm. or more tall. Leaves linear or lanceolate. Flowers blue, in a terminal, leafy panicle. Styles free. Stigmas clavate. Capsules 5-celled, spherical.

Cultivated on a very small scale during the winter season. Often found as an escape in cultivated fields, where the seeds probably come mixed with those of the cold season crops.

Local name : Alsi ; English name : Flax or linseed
Flowers and Fruits : Feb.-March
J. K. Maheshwari 2879

23. Malpighiaceae

Leaves eglandular ; calyx with a large gland — *Hiptage*
Leaves 2-glandular at base ; calyx usually glandless — *Galphimia*

Hiptage Gaertn.

H. benghalensis (Linn.) Kurz in JASB. 14 : 36, 1879 ; Santapau in RBSI. 16(1) : 34, 1953.

Banisteria benghalensis Linn. Sp. Pl. 427, 1753.

Hiptage madablota Gaertn. Fruct. 2 : 169, t. 116, 1790 ; FBI. 1 : 418 ; FUGP. 1 : 124.

An evergreen, straggling, often climbing shrub. Stems reddish-grey. Leaves ovate or elliptic-lanceolate, coriaceous. Flowers white and yellow. Samaras 3-winged ; one wing larger than the other two.

Planted in gardens and public parks.

Local name : Mangrelia
Flowers and Fruit : May-June
J. K. Maheshwari 654 Raj Coal

Galphimia Cav.

G. gracilis Bertl. in Linnaea 13 : 353, 1839 ; Niedenzu in Pflanz. 595 ; Bot. & Ruiz, 188, Pl. 69, 70

A dwarf shrub. Leaves oblong or ovate-lanceolate 2-5 × 1-2. Flowers yellow, in many-flowered panicles.

Native from Mexico to Panama and W. Indies. Cultivated as ornamental in gardens.

Flowers : J-A

J. K. Maheshwari 247

III. Zygophyllaceae

Fruits armed	
Fruits unarmed	
Leaves 1 to 3-foliolate ; stipules thorny	*Tribulus*
Leaves dissected ; stipules setaceous	*Fagonia*
	Peganum

Tribulus Linn.

T. terrestris Linn. Sp. Pl. 387 (1753) ; FBI 1 : 423 ; FUGP 1 : 127.

A procumbent, ascending or suberect herb. Leaves paripinnate. Leaflets 12-14. Flowers yellow, pseudo-axillary. Fruits schizocarpic, breaking into 4-6 cocci, each coccus with two sharp divaricate spines.

It is among the commonest plants to come up after the first showers. Commonly seen in all parts during rainy season on drying up sandy soil as well as in rocky tracts. The fruits are known locally as 'Gokhru'. The seeds and fruits are powdered and used in backache.

Local name : Bhankdi ; Gokhru
Flowers and Fruits : July-Dec.
J. K. Maheshwari 25, University Grounds

Fagonia Linn.

F. cretica Linn. Sp. Pl. 386. (1753) ; FUGP 1 : 127 ; Parker, For. 11 : 59.
F. arabica Linn. Sp. Pl. 386, 1753 ; FBI. 1 : 425.

A diffuse, branched, thorny herb or undershrub, up to 60 cm. tall. Nodes swollen. Branches glandular. Leaves 1 to 3-foliolate. Leaflets linear or elliptic. Stipular spines 3-4 at each node. Flowers pink or sometimes whitish. Nutlets 1-seeded. Seeds brown.

[illegible] found on hilly tracts [illegible] Delhi [illegible] yellow [illegible] and L. [illegible] root. The plants have recently been [illegible] near the [illegible] along the slope of the Water Reservoir near the [illegible] Medicinal where the [illegible] have been collected from. Medicinal where the [illegible] are [illegible] a spermatorrhoea. The roots given to children [illegible] age [illegible] in [illegible]

Local name : Dhaunsa
Flowers and Fruits : July (N)
J. K. Maheshwari 310

Peganum Linn.

P. harmala L. sp. Sp. Pl. 444, 1753 ; FBI 1 486 ; FUGP 1 [illegible]

A pretty bush-like glabrous herb. Leaves 4 cm long dissected into linear segments. Flowers white 2 cm or more across. Capsules globose, depressed at the top. Seeds angled, flat.

Rather rare, in dry rocky areas. Not seen on the Delhi Ridge but collected from Anand Parbat, Karol Bagh, usually in block characterized by sparse vegetation and dominated by *Adhatoda vasica* Nees. The presence of this plant seems to indicate accumulation of potassium nitrate in the soil.

Local name : Harmal
Flowers and Fruits : Aug
J. K. Maheshwari 1211 ; 1378, Shakti Nagar

25. Oxalidaceae

Trees ; fruit a berry	*Averrhoa*
Herbs ; fruit a capsule	*Oxalis*

Averrhoa Linn.

A. carambola L. sp. Sp. Pl. 428, 1753 ; FBI 1 439 ; FUGP 1 132 ; Merr. Enum. 2 324.

A medium-sized tree. Leaves imparipinnate. Flowers pinkish or purplish. Fruits yellow, ovoid or ellipsoid, acutely angled. 13 7 cm. Seeds arillate.

Common in the Sabzimandi and Sarai Rohilla fruit orchards. Cultivated for its fruit, which is eaten raw, cooked or pickled. Two varieties occur in the area : one with sweet and the other with acidic fruits. The flowers are borne in axillary cymes and also on the main trunk and branches (Cauliflory).

Local name : Kamrakh
Flowers : Summer and rainy seasons. Fruits : Cold season
J. K. Maheshwari 135 Sarai Rohilla Gardens

Oxalis [illegible]

[illegible] leaflets [illegible]
Flowers blush-purple [illegible] — *O. corymbosa*
Leaflets 3, obcordate [illegible] the apex
Leaflets 3, broadly [illegible] almost triangular — *O. martiana*
— *O. latifolia*

O. corniculata Linn. Sp. Pl. 435, 1753; FBI 1: 436. Fl. Cyp. [illegible]
C. filiformis Raist. [illegible] 1919.

A [illegible] pubescent herb with long, creeping or subterranean stems and ascending shoots. Leaflets broader than long. Capsules 2 cm. or more [illegible] angular. Seeds deep brown, rugose.

[illegible] having a preference for moist, shaded places. The leaves possess a agreeable acid taste and are eaten.

Local name: Khampa-methi; Khat-mitthi; Teepatiya; Khatta [illegible]; Nonki.
Flowers and Fruits: Nov.-June.
J. K. Maheshwari 116.

O. martiana Zucc. in Denkschr. Akad. Muench. 9: 144, n. 6, 1823-24 & in Act. Akad. Muench. 4: 203, 1829-1830; Kunth in Pfreich. 4: 130.

O. corymbosa DC. Prodr. 1: 696, 1824.

A stemless, pubescent perennial. Leaves radical. Leaflets broadly obcordate, divided at the tip. Peduncles axillary, radical. Flowers pale rose, veined with purple, in cymes. Ovaries angular; styles 5.

Naturalized in moist, shaded places in gardens, fruit orchards and nurseries. Seen frequently on the floor of green-houses and in pots, along with the winter ornamentals.

Local name: Khat-mitthi.
Flowers: Nov.-April.
J. K. Maheshwari 1035, 1222, Roshanara Gardens.

O. latifolia H. B. & K. Nov. Gen. & Sp. 5: 237, t. 467, 1821; Calder, op. cit. 335, f. 8; Kunth in Pfreich. 95: 273.

It resembles the preceding species except in the leaflets. Leaflets with divergent, more or less oval leaves, apices broad, not rounded, tapering towards the ends.

Native of Mexico, now naturalized in moist, shaded places in gardens, nursery beds and nursery pots.

Local name: Khat-mitthi; Khat-mandari.
Flowers: Dec.-June.
J. K. Maheshwari 77, Roshanara Gardens.

16. Rutaceae

Armed shrubs or trees — *Citrus*
Leaves not articulate; pericarp leathery
Leaves articulate; pericarp woody — *Aegle*
Leaflets 1; stamens numerous — *Feronia*
Leaflets more than 1; stamens 1–12
Unarmed shrubs or trees — *Murraya*
Anther filaments dilated below; style short — *Chalcas*
Anther filaments not dilated below; style long

Citrus Linn.

Petioles mostly broadly winged; fruits large-sized, normally over 12 cm. broad — *C. maxima*

Petioles naked or with wings seldom more than 1 cm. wide; fruits medium or small-sized, rarely more than 12 cm. broad

Young shoots usually purplish; petals more or less pink or purplish outside; rind of fruits thick and soft

Leaves highly scented; petiole short, not winged; fruits usually less than 10 cm. long, egg-shaped with a blunt apical projection. The Lemon — *C. limon*

Leaves not highly scented; petioles sometimes with a broad wing; fruits large, variable; rind very fragrant. The Citron — *C. medica*

Young shoots green or greenish-white; petals pure white; rind of fruits thin

Peel orange or scarlet-orange, bright; fruits rarely longer than broad — *C. aurantium*

Peel green or yellow when ripe; fruits often longer than broad

Pulp of fruit very acid, aromatic. The Sour Lime — *C. aurantifolia*

Pulp of fruit sweet, not aromatic. The Sweet Lime — *C. limettioides*

C. maxima (Burm.) Merr. Interpret. Herb. Amb. 296. 9 7 & Sp. Blanco. 204.

Aurantium maximum Burm. Ascl. Herb. Amb. 16, 1755

Citrus grandis Osbeck. Dagbok Ostind. Res. 98, 1757

C. decumana Linn. Syst. 508. 1774; FBI 1. 516; FUGP 1. 142.

Tree or large shrub. Twigs pubescent. Leaves large, ovate-oblong, often emarginate; petioles broadly winged. Flowers white. Fruits globose or pear-shaped; rind thick.

Cultivated in gardens.

Local name: Chakotra

J. K. Maheshwari 1439

C. limon (Linn.) Burm. f. Fl. Ind. 173 (1768). Webber & Batchelor, op. cit. 398.

C. medica Linn. var. *limon* Linn. Sp. Pl. 2: 782. 1753.

A small, thorny tree. Young leaves and flower buds [illegible] ovate; petioles marginate or winged. Fruits [illegible] yellow; rind [illegible].

Cultivated; grown for its fruits.

English name : Lemon

C. medica Linn. Sp. Pl. 782. 1753. FBI. 1: 544. 1875. Webber & Batchelor, op. cit. 396.

A shrub or small tree. Young parts glabrous; [illegible] petioles naked or marginate. Flowers white above, pinkish or [illegible] below. Fruits large, oblong or obovoid, yellow [illegible] and thick.

Cultivated.

English name : Citron

Flowers and Fruits : Greater part of the year.

C. aurantium Linn. Sp. Pl. 783. 1753. FBI. 1: 545. Fl. Gilg. 4: 63. Webber & Batchelor, op. cit. 400.

Shrub or small tree. Young shoots glabrous. Leaves elliptic or ovate. Flowers white. Fruits globose, slightly flattened at ends. Depressed [illegible]

Cultivated in gardens and nurseries for its use of fruit. The [illegible] commonly grown in the district are (1) Santara, (2) Kinnu, (3) Mu[illegible] and (4) Mandarin.

C. aurantifolia (Christm.) Swingle in Jour. Wash. Acad. Sci. 3: 465. 1913. Webber & Batchelor, op. cit. 401.

Limon aurantifolia Christm. in Linn. Pflanzensyst. 1: 518. 1777.

A shrub or small tree. Leaves elliptic-oblong or ovate; petioles winged. Flowers white. Fruits usually small, globose or ovoid, yellow or green when ripe, smooth; rind thin, tightly attached; pulp acidic.

Cultivated.

Local name : Nimbu ; Kaghzi-nimbu

C. limettioides Tanaka in JIBS. 16: 236. 1937.

A shrub. Petioles winged. Flowers small, pure white. Fruits globose or ovoid, smooth, thin-skinned, pale yellow; pulp sweet.

Cultivated. It is much used as a stock on which to graft loose-skinned oranges.

Local name : Mitha-nimbu (Mith of Lahore)

Fruits : Summer and rainy seasons

Aegle Correa nom. cons.

A. marmelos (Linn.) Correa in TLS. 5: 223. 1800; FBI. 1: 546.

[illegible] Sp. Pl. 444. 1753. [illegible] Flowers greenish white [illegible] The tree is held sacred by the [illegible]

[illegible] Helpa ca Sheepbal
[illegible] March [illegible] [illegible]
J. K. Maheshwari 1137

Family Lauraceae

[illegible] (Linn.) Swingle in Jour. Wash. Acad. Sci. 4 : 328, 1914
Mehrotra & Bachelor op. cit. 466.
Laurus nobilis Linn. Sp. Pl. 389. 1753.
Laurus alexandrina Corrêa in TLS. 5 : 225, 1800 ; FBI 1 : 516
FLOP 1 : 143

A small to medium-sized tree. Bark brown-grey. Thorns 2-3, 0.4-5 cm long. Branches spreading horizontally. Leaves 3 to 5 fascicle, sweet-smelling; petioles and rachides often winged. Flowers pale green. Anthers dark red. Fruits large, globose, rind woody.

Found in a semi-wild state on the Ridge, it has been planted near Chaubburja and Rajpur Roads in Old Delhi. Seen occasionally in gardens.

Local name : Karth
Flowers : March-May. Fruits : Oct
J. K. Maheshwari 1032, Old Delhi Ridge ; 1141

Clausena Burm. f.

C. lansium (Lour.) Skeels in U.S. Dept. Agric. Bur. Pl. Ind. Bull. 168 : 3, 1909 ; Merr. Enum. 2 : 337
Quisqualis lansium Lour. Fl. Cochinch. 272, 1790.
Clausena wampi Blanco, Fl. Filip. 358, 1837 ; FBI 1 : 505
C. wampi Oliv. in JLS. 5, Suppl. 2 : 34, 1861.

An unarmed, small tree. Leaves and inflorescences pubescent. Leaves imparipinnate. Leaflets ovate or elliptic. Flowers white, in compound panicles. Fruits small, orange-flavoured.

Occasionally cultivated in gardens for its fruit.

Local name : Ampich
Flowers : March-April. Fruits : May-June
J. K. Maheshwari 634, University Campus

[illegible]

Murraya [illegible]

[illegible]

M. koenigii [illegible] FBI [illegible] FUGP [illegible]

Bergera koenigii [illegible]

[illegible]

Local name Meth[illegible]

Flowers and Fruits Summer season

J. K. Maheshwari 1145 1170, 1335

M. paniculata (L.) Jack in Mal. Misc. 1(5): 31, 1820, Santapau in BAST 64 39 1963

Chalcas paniculata Linn. Mant. 68, 1767

Murraya exotica Linn. Mant. 563, 1771 (*Murraea*), FBI. 1 502 FUGP 1, 137

An evergreen, attractive small tree or large shrub. Bark ash-coloured. Leaflets 3-9, shining. Flowers white, fragrant, in short corymbs. Berries ovoid, bright red or orange-coloured.

Grown in gardens for its ornamental appearance and also planted as a hedge plant.

Local name Kamini

Flowers: Summer and rainy seasons. Fruits: Cold season

J. K. Maheshwari 633 690

27. Simaroubaceae

Large trees, leaves pinnate; fruit a samara . . . . . *Ailanthus*
Small spiny trees; leaves 2-foliolate; fruit a drupe . . . . *Balanites*

Ailanthus Desf. nom. cons.

A. excelsa Roxb. Pl. Cor. 1: 23, 1795. FBI 1 518. FUGP 1, 144. Parker For. Fl. 68.

A large beautiful tree. Wood soft, white. Leaves imparipinnate. Flowers pendulous, greenish yellow, all smelling, in large panicles. Samaras copper red, once or twice twisted at the base.

It thrives well and has been planted along several roads of New Delhi. The leaves are boiled and their extract is used for washing wounds and skin eruptions.

[illegible]

[illegible] Hedge [illegible]
[illegible] Anna Mas [illegible] Jur Sent
J. K. Mahesh [illegible] Kalamel Road

28. Ochnaceae

Ochna Linn.

[illegible] in Sp. Pl. [illegible] 1 67 FBI 1 : 527

A large shrub. Bark smooth, brown. Leaves of puc [illegible] pinnatinerve parallel-nerved. Flowers yellow, about 2.5 cm. across, fragrant, in corymbose racemes. Drupes black.

Grown in lawns of public gardens for its handsome appearance and fragrant flowers.

Flowers April

J. K. Maheshwari 1005, Lodi Gardens

29. Burseraceae

Boswellia Roxb.

[illegible] Roxb. ex Colebr. in As. Res. 9 : 379, t. 5, 1807 ; FBI 1 : 528

Fl. Cal. 147 Parker For. Fl. 69

Marcel and Fox 46 4 (1930) reports this plant [illegible] I have not seen the plant [illegible] the field

[illegible]

Azadirachta [illegible]

A. indica [illegible]

Melia azadirachta Linn. Sp. Pl. 385. 1753 FBI 1 : 544 FUGP [illegible] 150

A large tree. Leaves 20-30 cm. long, crowded near the end [illegible] branches, pinnate. Leaflets 10-12 [illegible] 5 cm., sessile. Flowers white scented. Anthers 10. Ovary 3-celled. Drupes ovoid-oblong, smooth yellow when ripe.

A common roadside tree. Self-sown young plants are frequently seen on the Ridge. The bark, leaves, flowers [illegible] and the oil they yield are used for food as well as for medicine.

Local name : Nim ; Neem
Flowers : March-May. Fruits : May-July
J. K. Maheshwari 666

Melia Linn.

M. azedarach L. Linn. Sp. Pl. 384. 1753 FBI 1 : 544 FUGP [illegible] 15 Parker For. Fl. 72 ; Merr. Enum. 2 : 366

A medium-sized tree, up to 12 m. high. Leaves bipinnate. Leaflets 3-5-7-5 [illegible] 3 cm., serrate. Flowers lilac-blue. Ovary 5-celled. Drupes globose, more or less dry, yellow and wrinkled at maturity.

Planted along roadsides and in the squares and gardens of New Delhi. The tree deserves a place in avenues and in the gardens near the ancient monuments of Delhi and New Delhi. It is referred to as the Pride of India and in English it is known as the Persian Lilac.

[illegible]

[illegible] Jacq.

[illegible] Jacq. Enum. Pl. Carib. 20. 1760. Gamble Fl. Pres. Mad. 187[illegible] An evergreen tree. Leaves paripinnate. Leaflets oblique, ovate or [illegible]-late, entire, glabrous. Flowers greenish-yellow, in axillary panicles.

Planted in parks.

Local name: *Mahogani*

Chikrasia A. Juss.

[illegible] A. Juss. in Mém. Mus. Par. 19: 251, t. 12, f. 37, 1830; Brandis, Ind. Tr. 144.

A large, beautiful tree with reddish-brown bark. Leaves pinnate. Leaflets alternate to subopposite, 10-13, 4.5-5.5 cm.; upper surface glabrous and shining, lower pale yellow and pubescent, but not velvety.

Although a native of India, according to the 'Malis' of Delhi, it has not so far been observed to flower in this area. Planted along roadsides, in public gardens, lawns and squares. Produces a dense, shady crown of foliage.

Local name : Chikrasi
J. K. Maheshwari 745, Lodi Gardens

31. [illegible]

Maytenus [illegible] H. & K. [illegible]

M. senegalensis [illegible]

[illegible]

Common on the Ridge; either associated with *Capparis* [illegible] or other shrubs, or straggling amongst [illegible]

Local name: Kakera

Flowers June-Oct. Fruits Feb.-April

J. K. Maheshwari 463, Ridge

32. Rhamnaceae

Zizyphus Mill.

Trees, drupes 1.5-2 cm. or longer — *Z. mauritiana*
Small bushes, drupes globose, 1-1.5 cm. long — *Z. nummularia*
Straggling or climbing shrubs; drupes 7 mm. long — *Z. senegalensis*

Z. mauritiana Lamk.* Encycl. 3: 319. 1789; Santapau in IBNHS [illegible] 1953.

Z. jujuba Lamk. Encycl. 3: 318. 1789 (non Mill. 1768); F.B.I. 1: 632; FLGP 1: 163.

An erect tree with a spreading crown. Bark [illegible] black. Prickles solitary or paired. Leaves variable, [illegible] oblong-elliptic. Flowers greenish-yellow. Drupes [illegible] ovoid, red, orange or yellowish.

Occurs in a wild state near Qutab and other parts [illegible]. Commonly cultivated for its fruit in the Sabzimandi and Sarai R[illegible] fruit orchards. The shape and size of the leaves as well as fru[illegible] considerably; they are small in the wild plants and larger in the cultivated races. The common races cultivated in the area are [illegible] Dandan, Gola, Sev, Khatti and Zafran.

*This species has been [illegible] as *Z. [illegible]* Lamk. [illegible] *Z. mauritiana* Lamk. (Santapau, loc. cit.). The name *Z. jujuba* [illegible] preoccupied by Miller's name of 1768 and Lamarck's name is therefore illegitimate being a later homonym in the sense of Art. 64 of Montreal Code (1961).

[illegible]

Local name [illegible]

Flowers [illegible] Sept. Nov. Fruits [illegible] Cold season

J. K. Maheshwari [illegible] Kangra Gardens [illegible]

J. mucronulata Royle Ill. Wr. & Arn. Prodr. 167. 1834. J. B. [illegible]

Parker [illegible]

Rhamnus mucronata [illegible]

J. [illegible] Lank. [illegible] Stems and branches pale [illegible]

A [illegible] small bush [illegible] Leaves [illegible] Stipular prickles in pairs. Leaves [illegible] Flowers pale yellow [illegible] [illegible] beneath. Flowers [illegible] [illegible] black.

Common on the Ridge and in the plains on [illegible]. The leaves are used as fodder for camels, sheep and goats. Shepherd [illegible] [illegible]

Local name: Kokanher; Badber; Jhud; Ber.
Flowers: June-Sept. Fruits: Cold season.
J. K. Maheshwari 456, Ridge.

Z. oenoplia Mill. Gard. Dict. no. 3. 1768. FBI. 2. 634. FLGP. [illegible]

Rhamnus oenoplia Linn. Sp. Pl. 194. 1753.

A straggling or climbing shrub. Prickles paired, one straight, the other recurved. Leaves ovate, pointed, base oblique. Flowers on short axillary dichotomous cymes. Drupes globose or obovoid, black, shining.

A rare plant in the district.

Flowers: April-May. Fruits: Rainy season.
J. K. Maheshwari 1450, near Suraj Kund.

33. Vitaceae

Leaves trifoliolate, flowers hermaphrodite, petals 4 . . . *Cayratia*
Leaves simple, flowers polygamo-dioecious, petals 5 . . . *Vitis*

Cayratia Juss. nom. cons.

C. carnosa Gagnep. in Not. Syst. 1. 347. 1911. Gamble, Fl. Pres. Mad. 237.

Vitis carnosa Wall. Cat. 6018. 1831-32, nom. nud. Wt. & Arn. Prodr. 127. 1834.

V. trifolia Linn. Sp. Pl. 203. 1753. FUGP. 1. 174.

A creeping or twining shrub. Leaves trifoliolate. Leaflets variable, crenulate-serrate. Tendrils branched. Flowers greenish-white, in umbellate cymes. Berries globose, black, 2 to 4-seeded.

Common in the Sabernandi and Sarai Rohilla Gardens, where it is

[illegible]

J. K. Maheshwari [illegible]

Vitis Linn.

V. vinifera [illegible] A woody climber [illegible] Leaves [illegible] (Occasionally cultivated in the fruit orchards of Sahi mandi and Sa[illegible] Robilla.

Local name: Angur. English name: Grape.
J. K. Maheshwari 1419. Gulab Bagh Nursery.

34. Sapindaceae

Climbing herbs ; flowers petalous — *Cardiospermum*
Erect shrubs or trees ; flowers apetalous
  Evergreen shrubs ; leaves simple — *Dodonaea*
  Trees ; leaves compound ;
    Calyx 4 to 6-lobed ; ovary glabrous ; fruits smooth or prickly — *Schleichera*
    Calyx nearly truncate or shallowly lobed ; ovary pubescent ; fruits often verrucose ; fruits tubercled — *Litchi*

Cardiospermum Linn.

C. halicacabum Linn. Sp. Pl. 366, 1753 ; FBI 1 : 670 ; FLGP 1 : 178 ; Merr. Enum. 2 : 493.

An erect herb or climbing by tendrils. Leaves bipinnate. Leaflets pinnately lobed. Flowers white. Capsules trigonous, bladder-like winged at the three angles. Seeds black.

Common during the monsoon period on the Ridge and the neighbouring hilly tracts, often climbing on shrubs and trees in shady places or depressions.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 276

Dodonaea Linn.

D. viscosa (Linn.) Jacq. Enum. Pl. Carib. 19 : 1760 ; FBI 1 : 697 ; FLGP 1 : 182

[illegible]

[illegible] Feb. March

A. [illegible]

Schleichera [illegible]

A. oleosa [illegible] Bot. Allg. Naturgesch. (Jt 2 [illegible] 1847 [illegible] KRIS [illegible] 57 1953 Bor, Man. Ind. For. [illegible] 260

[illegible] Lour. Fl. Cochinch. 2 613 1790

[illegible] Willd. Sp. Pl. 4 (2): 1396. 1806 ; FBI [illegible] 68 FUGP 1 : 179.

A handsome tree Leaves paripinnate. Flowers yellowish-green [illegible] pustled, smooth or echinate.

Fl [illegible] gardens I is distinguishable by its bright red young [illegible] which appears in April The subacrid arils are eaten The o l [illegible] he seeds is used in perfumery

Local name : Kusum

Flowers and Fruits : Summer season

J K Maheshwari 1431

Litchi Sonner

L. chinensis Sonner Voy Inde 3 255, 1782 Benthal. Trees Calc [illegible] 34

Nephelium litchi Camb. in Mém. Mus. Par, 18 : 30, 1829.

Dimocarpus litchi Lour, Fl. Cochinch, 233, 1790

A small tree Leaves paripinnate Leaflets 4-12, opposite or a-ter[illegible] oblong-lanceolate or ovate, glabrous. Flowers minute, in terminal panicles Fruits red or pink when ripe ; pericarp brittle, tubercled Seed [illegible] and large fleshy

Cultivated in gardens for its very delicious fruits.

Local name : Lichi

Flowers and Fruits : April-June

J K Maheshwari 1416

35. Anacardiaceae

Leaves simple ; ovary 1-celled ; style lateral — *Mangifera*

Leaves compound

Leaves imparipinnate

Ovary 5-celled — *Spondias*

Mangifera Linn.

M. indica [illegible]

[illegible] Local name : Am ; English name : M[illegible]
Flowers : March-April Fruits : June-J[illegible]
J. K. Maheshwari 1415

Spondias Linn.

S. pinnata (Linn. f.) Kurz, Pegu Rep. A. 44, 1875; Merr. [illegible] Bot. Man. Ind. For. Bot. 267

Mangifera pinnata Linn. f. Suppl. 156, 1781

Spondias mangifera Willd. Sp. Pl. 2 : 751, 1799 ; FBI 2 : 4[illegible] ; FI. GP. I : 190.

A medium-sized tree, branching above. Trunk about 30 cm. in girth. Bark white-grey. Leaflets 9-13, elliptic-oblong. Flowers greenish-white polygamous, in panicles. Drupes fleshy, yellow, 5 × 3.5 cm.

Cultivated in gardens for its acidic fruit which is eaten as pickle. The tree is leafless from December to April when flowers and new foliage appear.

Local name : Amra
Flowers : May. Fruits : June
J. K. Maheshwari 120, 21 Bigah Bagh (Azadpur)

Schinus Linn.

S. terebinthifolius Raddi in Mem. Mod. 18, Fis. 399, 1820; Parker, For. Fl. 119 ; Bailey, Man. Cult. Pl. 627

An evergreen shrub. Leaflets 7-11, 3-7 × 1.5-2.5 cm., elliptic-oblong to elliptic-lanceolate, dark green above, pale beneath. Flowers sublimy white, in axillary and terminal panicles. Stamens 10. Drupes globose, small, bright green.

Native of Brazil. Grown in the hedges in public gardens and around bungalows for its ornamental appearance.

[illegible]

Flowers [illegible] Nehru Gardens
J. K. Maheshwari [illegible]

Rhus Linn.

R. mysorensis Heyne ex W. & A. Prodr. 172 1834; FBI 2 9

[illegible] Parker Kew 11 11

A heavy shrub. Leaflets 3, minute toothed, obovate or cuneate [illegible] yellowish, unisexual, in axillary and terminal panicles [illegible] drupes small, dry, compressed.

[illegible] common. Some shrubs occur in the Reserved Forest area of New Delhi Ridge. The sour fruits are eaten.

Local name : Dhamora
Flowers and Fruits : Sept.
J. K. Maheshwari 1051, New Delhi Ridge

36. Moringaceae

Moringa Adans.

M. oleifera Lamk. Encycl. 1 398 1785; Beathale, Trees Calc. 137

Guilandina moringa Linn. Sp. Pl. 381, 1753

Moringa pterygosperma Gaertn. Fruct. 2 314 1791; FBI 2 45; FL GP 1 192.

A small or large tree. Trunk grey-white with longitudinal wrinkles. Leaves polypinnate. Leaflets obovate or elliptic. Flowers pale white, fragrant. Pods long, pendulous.

Cultivated in private and public gardens, and urban areas of the district. The green pods are used as vegetable.

Local name : Sonjna
Flowers : Feb.-April. Fruits : April-June
J. K. Maheshwari 12.8

37. Papilionaceae (Fabaceae)

Tribe 1 *Genisteae* Leaves simple or digitately 3-foliolate; stamens monadelphous.

Anthers unequal; pods turgid, thick :

Prostrate herbs . . . . . 1. *Heylandia*

Erect herbs, undershrubs or shrubs . . . . . 2. *Crotalaria*

Tribe 2 *Trifolieae* Leaves pinnately or digitately 3-foliolate; leaflets toothed; stamens diadelphous.

Leaves digitately 3-foliolate . . . . . 3. *Trifolium*

Leaves pinnately 3-foliolate :

Pods spi[illegible]
Pods st[illegible]
Pods sho[illegible] 4. [illegible]
5. [illegible]
6. [illegible]

Tribe 3. *Galegeae*. Leaves [illegible] pinnate; [illegible] usually [illegible]
Anthers [illegible] not cupped for [illegible] centrally attached
Stamens [illegible] monadelphous
Stamens diadelphous 7. [illegible]
Anthers [illegible], bases basifixed 8. *Indigofera*
Pods [illegible] seeded; leaves [illegible]-foliolated
Pods few or many-seeded 9. *Psoralea*
Flowers in axillary racemes; pods long 10. *Sesbania*
Flowers in terminal, leaf-opposed or paniculate racemes
Herbs or undershrubs; stamens diadelphous *Tephrosia*
Trees; stamens monadelphous 12. *Millettia*

Tribe 4. *Hedysareae*. Leaves imparipinnate or uni- to 3-foliolate; stamens diadelphous; pods jointed or constricted.
Fruits aerial
Leaves bifoliolate; stamens monadelphous; anthers inequal . . . 13. *Zornia*
Leaves simple or pinnate; stamens diadelphous; anthers equal
Leaves odd-pinnate; stamens in 2 bundles of 5 each 14. *Aeschynomene*
Leaves simple or 3-foliolate; stamens in bundles of 9 and 1
Thorny herbs or undershrubs . . . . . 15. *Alhagi*
Unarmed herbs:
Sections of pods flattened . . . . . 16. *Desmodium*
Sections of pods thick . 17. *Alysicarpus*
Fruits geocarpic, i.e. maturing underground . 18. *Arachis*

Tribe 5. *Vicieae*. Leaves paripinnate; rachis ending in a tendril or bristle; stamens diadelphous.
Climbers; stamens 9, the odd one absent; seeds scarlet 19. *Abrus*
Erect or diffuse herbs; stamens 10:
Leaflets toothed; petal wings free from the keel 20. *Cicer*
Leaflets entire or obscurely toothed; petal wings attached to the keel
Staminal mouth oblique
Style bearded in tuft or ring at apex . . . . . 21. *Vicia*
Style bearded down one side . . . . . 22. *Lens*
Staminal mouth truncate:
Leaflets entire; style flat at the apex . . . . 23. *Lathyrus*
Leaflets obscurely toothed; style dilated from base upwards . . . . . 24. *Pisum*

[illegible]

[illegible] 6. *Mucuna*
[illegible] 7. *Erythrina*
[illegible] leaflets stipellate
[illegible] 28. *Pueraria*
[illegible] 29. *Butea*
[illegible] 4. *Phaseolus*. Leaves not glandular [illegible] stamens [illegible]
[illegible] beardless
Stem [illegible] 30. *Dolichos*
Petals equal
Petals very unequal 31. *Clitoria*
Stem [illegible]
Petal keel forming a spiral 32. *Phaseolus*
Petal keel not spirally twisted 33. *Vigna*
[illegible] 5. *Cajanus*. Leaves gland-dotted beneath; leaflets ex-stipellate [illegible] beardless
Pod [illegible] 2-seeded 34. *Rhynchosia*
Pods [illegible] or more seeded
Seeds arillate . . . . . 35. *Atylosia*
Seeds non-arillate . . . . . 36. *Cajanus*

Tribe 7. *Dalbergieae*. Leaves imparipinnate; stamens mono- or dia-delphous; pods continuous
Leaflets opposite:
Climbers; pods winged . . . . . 37. *Derris*
Trees; pods not winged . . . . . 38. *Pongamia*
Leaflets alternate 39. *Dalbergia*

Tribe 8. *Sophoreae*. Leaves imparipinnate; stamens free
Pods moniliform . . . . . 40. *Sophora*

The following artificial key is provided to facilitate quick determination of the genera.

1. Flowers white or whitish
2. Herbs
3. Leaves ending in a tendril:
4. Stipules large, foliaceous, auricled 24. *Pisum*
4. Stipules small, non foliaceous, semi-sagittate 21. *Vicia*

[illegible]

[illegible]

11. Fruits aerial
    12. Prostrate herbs [illegible]
    12. Erect herbs [illegible]
10. Leaves bifoliolate [illegible]
10. Leaves compound [illegible]
    13. Leaflets three
        14. Leaves gland-dotted beneath
            15. Habit erect; species cultivated [illegible]
            15. Habit twining; species wild [illegible]
                16. Pods 1 to 2-seeded [illegible]
                16. Pods 3 to 4-seeded 34. [illegible]
        14. Leaves not gland-dotted beneath 35. [illegible]
            17. Trees
            17. Herbs or shrubs 39. [illegible]
                18. Stamens monadelphous; pods obliquely subulate [illegible] 2. Crotalaria
                18. Stamens diadelphous; pods linear, subglobose, roundish
                19. Pods spinous, spirally twisted 4. M[illegible]
                19. Pods glabrous or hairy, not spirally twisted
                20. Leaves digitately 3-foliolate 3. [illegible]
                20. Leaves pinnately 3-foliolate
                21. Leaflets under 25 mm. long
                22. Pods straight or recurved 5. [illegible]
                22. Pods short, round or oblong 6. Me[illegible]
                21. Leaflets 25 mm. or more in length

[illegible]

Leaflets [illegible]

[illegible] Trees with unarmed branches [illegible]

7. Leaflets more than 3

[illegible] Leaflets glaucous, coriaceous [illegible]

[illegible] Leaflets not glaucous, subcoriaceous [illegible]

[illegible] Herbs, shrubs or climbers

30. Leaves ending in a tendril

[illegible] Leaflets 2 [illegible]

31. Leaflets more than 2

32. Stipules large, foliaceous [illegible]

[illegible] Stipules not foliaceous

[illegible] Species wild: style bearded in tuft or ring at base [illegible]

[illegible] Species cultivated: style bearded [illegible]

30. Leaves not ending in a tendril

34. Leaves simple

35. Thorny herbs or undershrubs 15. *Alhagi*

35. Unarmed herbs or undershrubs:

36. Pods 1 to 2-seeded, globose or oblong [illegible]

36. Pods more than 2-seeded:

37. Pods continuous or scarcely jointed dehiscent [illegible]

37. Pods torulose or of several 1-seeded [illegible] 11. *Tephrosia*

[illegible] Pods not only torulose [illegible]

[illegible] Pods jointed, separating [illegible] joints

39. Joints of pods turgid 17. *Alysicarpus*

39. Joints of pods flattened 16. *Desmodium*

[illegible]

40. [illegible]

41. [illegible]

44. [illegible]

45. Style [illegible]

45. Style bearded [illegible]

34. Leaflets more than 3 [illegible]

46. Leaflets sharply serrate [illegible]

46. Leaflets entire [illegible]

47. Herbaceous climbers ; stamens 9 [illegible]

47. Erect, diffuse or prostrate herbs or [illegible] stamens 10 [illegible]

48. Seeds 3 or 4 [illegible]

49. Flowers pale purple [illegible]

49. Flowers bright red [illegible]

48. Seeds more than 2 [illegible] 6. *Indigofera*

50. Anthers apiculate [illegible]

50. Anthers not apiculate [illegible] 41. *Tephrosia*

1. Flowers blue, violet, dark purple or maroon [illegible]

51. Leaves ending in a tendril [illegible]

52. Leaflets 2 ; stipules not large [illegible] 33. *Lathyrus*

52. Leaflets more than 2 ; stipules large, foliaceous [illegible]

51. Leaves not ending in a tendril [illegible]

53. Pods spirally twisted ; flowers purplish ; leaflets 3 [illegible] 4. *Mucuna*

53. Pods not spirally twisted ; leaves simple or compound [illegible]

54. Seed 1 ; leaves simple or trifoliolate [illegible]

54. Seeds 2 to many [illegible]

55. Herbs ; leaflets sharply serrate [illegible]

55. Climbers or twiners [illegible]

56. Leaflets 3 . . . . . 26. *Mucuna*

[illegible]

1. **Heylandia** DC

H. latebrosa DC. Mem. Leg. 6. 201. 1825. F.B.I. 2. 65. F.U.G.P. 1. 200.

A prostrate, much-branched, hairy herb. Leaves simple, 8-5 [illegible] ovate, cordate-ovate, unequal at the base. Flowers [illegible] axillary. Pods oblong, 5-7 × 4 mm., flat, silky.

Occurs in fields, collected once from the fields near Todapur. I.A.R.I.

Flowers and Fruits : March-April.

J. K. Maheshwari 1414.

2. **Crotalaria** Linn.

Leaves trifoliolate . . . . . *C. medicaginea*
Leaves simple :
Shrubs ; pods silky-hairy . . . . . *C. juncea*
Herbs or undershrubs ; pods glabrous or villous
Stipules absent . much-branched, xerophytic undershrubs . . . . . *C. burhia*
Stipules present , herbs or undershrubs .
Stipules large, leafy . . . . . *C. sericea*
Stipules small, linear . . . . . *C. mysorensis*

C. medicaginea Lamk. var. **lavarians** Baker in F.B.I. 2. 81. 1876. F.U.G.P. 1. 207.

An erect, perennial herb or undershrub with several ascending branches. Colour of roots like that of turmeric. Leaflets variable in shape. Flowers yellow, in many-flowered, erect, often leaf-opposed racemes. Pods obliquely subglobose, 5-5 mm., 2-seeded. Seeds polished.

Common in the fields of Jowar (*Sorghum vulgare* Pers.), Gawar (*Cyamopsis tetragonoloba* Taub.), San hemp (*Crotalaria juncea* Linn.) and other crops. Not common on the Ridge. Also met occasionally on the lawns, fallow fields, in disturbed places and along roads-sides. Given as a fodder to camels and goats.

Local name : Kadlah
Flowers and fruits
J. K. Maheshwari 431 442

[illegible]

[illegible]
Flowers [illegible] Sep
J. K. Maheshwari 444 Nagarjuna

C. burhia [illegible] Wall. Cat. 5386. 1831 [illegible] Hook. f. and Thom. Jour. Bot. 2 : 474, 1850, cum descript. FBI 2 : [illegible] 70. Parker, For. Fl. 128

An erect or diffuse, much-branched, [illegible] shrub. Leaves oblong or lanceolate [illegible] Flowers yellow with red [illegible] shrub. Pods [illegible]

Found in sandy and rocky areas near villages in the district. The branches and leaves are used as fodder.

Local name : Jhamo ; Khip ; Kaur ela
Flowers : May Sept.
J. K. Maheshwari 752 1393, Nagalgarh

C. sericea Retz. Obs. 5 : 26. 1788 ; FBI 2 : 75 ; FUGP 1 : 205.

A rare plant. Harbhajan Singh (Ind. Jour. Agric. Sci. 15(6) : 304. 1945) records this species from the district.

An erect, robust undershrub. Leaves oblong-lanceolate [illegible] leafy, persistent. Bracts leafy. Flowers yellow, tinged with purple. Pods stipitate, oblong.

Local name : Sann.
Flowers : Cold season.

C. mysorensis Roth. Nov. Pl. Sp. 338, 1821 ; FBI 2 : 70 ; FUGP 1 : 204.

Harbhajan Singh (loc. cit.) records the occurrence of this species in Delhi. I have not seen the living plants in the field.

A much-branched herb. Leaves linear-oblong. Stipules [illegible]. Flowers yellow ; bracts leafy. Pods oblong.

3. Trifolium Linn.

T. alexandrinum Linn. Cent. Pl. 1 : 25, 1755 ; Bailey, Man. Cult. Pl. 58

[illegible]

Local name : Brocoem
Flowers and Fruits : Cold season
J. K. Maheshwari 1090, Univ. Bot. Garden

4. Medicago Linn.

Plants wild : flowers yellow	*M. denticulata*
Plants cultivated : flowers purplish	*M. sativa*

M. denticulata Willd. Sp. Pl. 3 : 1414, 1802 ; FB. 2 : 90 ; FLGP. 1 : 1.

A glabrous annual with prostrate branches. Leaflets obovate-cuneate, [illegible] Flowers yellow, few, umbelled ; bracts scarious. Pod-subglobose, of 2-4 spirals, spinous, about 6 × 6 mm.

Common as a winter weed in cultivated fields and moist waste [illegible] forms the dominant vegetation in some parts. Often mixed along with *Melilotus indica* All., *M. alba* Desr., *Trigonella incana* Benth., and other weeds. Used by the poorer classes as a leafy vegetable mixed with potatoes, etc.

Local name : Miana, Chandausi
Flowers and Fruits : Cold season
J. K. Maheshwari 574, Shahdara

M. sativa Linn. Sp. Pl. 778, 1753 ; Bailey, Man. Cult. Pl. 582.

An erect hairy branched perennial, grown as an annual, 0.3-1 m. high. Leaflets obovate, oblanceolate, denticulate towards the apex. Flowers purplish, in close racemes. Pods with 2 or 3 spirals.

Cultivated during the cold season and early summer months for its importance as a fodder. The crop is generally harvested before flowering [illegible].

Local name : Rijka
Flowers and Fruits : Late winter and early summer
J. K. Maheshwari 46, Timarpur, 1014, Azadpur fields.

5. Trigonella Linn.

Pods narrow, linear, falcate	*T. corniculata*
Pods long, turgid, usually curved : Pods long-beaked	*T. foenum-graecum*

[illegible]

[illegible]

T. corniculata [illegible]

[illegible]

T. foenum-graecum [illegible]

[illegible] Pods 5-6 cm. long [illegible]

Cultivated as a cold season fodder and vegetable [illegible] giving off a peculiar odour

Local name : Methi

Flowers and Fruits : Feb.-March

J. K. Maheshwari 605, Najafgarh

T. incisa Benth. in Royle Ill. 197, 1835 ; Singh in Publ. Fac. Sc. Masaryk No. 136 ; 11 1951

A slender, prostrate, subcreet or diffuse annual. Leaflets [illegible] sharply inciso-dentate in the upper half. Flowers yellow. Pods [illegible] 0.2 cm., sickle-shaped, flat.

Found as a winter weed in fields ; often occurs in association with *Medicago denticulata* Willd. It is picked up by the poorer [illegible] and used as vegetable.

Local name : Chanthari

Flowers and Fruits : Dec.-March

J. K. Maheshwari 617

6. Melilotus Juss.

Flowers white . . . . . *M.* [illegible]

Flowers yellow . . . . . *M.* [illegible]

M. alba Desr. in Lamk. Encycl. 4 63, 1797 ; FBI 2 89 ; Fl. G. [illegible] 208

An erect or decumbent annual. Leaflets obovate, oblong, [illegible] distantly serrulate. Flowers half to full pendulous. Pods [illegible] round-oblong.

Common as a winter weed in fields, along canal banks and waste grounds. It is used for bee-keeping.

Local name : Khandu

[illegible]

J. K. Maheshwari [illegible] Lahore

M. indica [illegible] Roxb. [illegible] Atlant. 2 192 (1798) FBI. 2 89

An erect [illegible] Flowers [illegible] Pods [illegible] seeded

A [illegible] weed in [illegible] waste places [illegible] cultivated fields. Used as green fodder

Local name Metha Sen.

Flowers and Fruits Dec June

J. K. Maheshwari 603, University Campus

7. Cyamopsis DC

C. tetragonoloba (Linn.) Taub. in Engl. & Prantl. Nat. Pflan. 3(3) 259 1894

Psoralea tetragonoloba Linn. Mant. 104. 1767

Cyamopsis psoraloides DC Prodr 2 216, 1825 FBI. 2 92, FLCP 1 248

An erect robust annual Leaflets 3, ovate-elliptic, coarsely toothed. Flowers pinkish-purple, in axillary racemes. Pods erect Seeds [illegible] compressed.

Commonly cultivated during the rainy season for its pods which are used as vegetable and for feeding cattle, often grown in fields of Jowar and Bajra.

Local name : Guar, Gawar

Flowers and Fruits : July-Nov

J. K. Maheshwari 191, Azadpur

8. Indigofera Linn

1 Leaves simple

2. Leaves linear pods globose, 1 seeded — *I. linifolia*

2. Leaves ovate, pods oblong, 1 to 2-seeded — *I. cordifolia*

1 Leaves unifoliolate to trifoliolate pods torulose — *I. oblongifolia*

1 Leaves 3 obovate to imparipinnate, pods not torulose

3 Flowers in dense, spike-like heads — *I. enneaphylla*

3. Flowers in racemes

4. Pods flat, reflexed . . . . . — *I. hochstetteri*

4. Pods turgid :

5 Leaflets 3 — *I. trita*

5. Leaflets 5-13 :

6. Pods tetragonous, hirsute — *I. astragalina*

6. Pods cylindrical, glabrous — *I. tinctoria*

I. bifolia [illegible]

[illegible]

Local name : [illegible]
Flowers and Fruits : Pre-monsoon and monsoon period
J. K. Maheshwari 1091

I. cordifolia Hoyne ex Roth, Nov. Pl. Sp. 357, 1821 ; FBI 2 : 93 ; FUGP 1 : 250 ; Gillett, loc. cit.

A prostrate or diffuse annual, clothed with long white hairs. Leaves ovate, densely hairy. Flowers red in small, axillary heads. Pods [illegible] oblong.

Common in lawns and waste places.

Flowers and Fruits : Rainy season.
J. K. Maheshwari 1088

I. oblongifolia Forsk. Fl. Aegypt.-Arab. 137, 1775 ; FUGP. 1 : 253.
I. paucifolia Delile, Fl. Egypte 251, 1813 ; FBI 2 : 97.

A woody, scrubby, diffuse undershrub. Branches many, stout, dark purplish, silvery-canescent. Leaves 1 to 3-foliolate, reduced to one leaflet on the lower branches, glabrous, obtuse-elliptic or oblong-elliptic. Flowers very minute, red, in many-flowered racemes. Pods purplish, distinctly orbiculose, pointed, deflexed, straight or curved, 15-20 x 1.5 mm.

Rather rare in Delhi. Found only on the way to Gurukul Indraprastha near the railway line from Delhi to Faridabad in open depressed places growing along with *Zizyphus nummularia* Wt. & Arn.

Local name : Jhungi ; Vilayti jhojhru
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1239 , 1331

I. ennaphylla Linn. Mant. 272, 1771 ; FBI 2 : 94 ; FUGP 1 : 250 ; Gillett, loc. cit.

A mat-forming, prostrate herb. Stems appressed hairy. Leaflets 7-9, hirsute. Flowers small, bright red, in dense heads. Pods oblong, hispid, about 5 x 2 mm. Seeds 2.

Common during the monsoon period forming a dense mat in lawns. Grows on the Ridge in dry, gravelly soil. Can serve as an efficient soil binder due to its characteristic habit.

Local name : Leel

[illegible]

[illegible] Ridge

[illegible] Hooker in FBI [illegible] FUGP 1 : 251

[illegible] with [illegible] spreading branches. Leaflets [illegible] Flowers [illegible] deflexed flat [illegible] Sweden

[illegible] Campus amongst grasses. [illegible] known from the [illegible] edge with. The leaves turn brownish-black after drying [illegible] side.

Local name : Khandidal
Flowers and Fruits : Rainy season
J. K. Maheshwari 21 University Grounds

T. trita Linn. f. Suppl. 335 1781 ; FBI. 2 : 96 ; FUGP 1 : 252

A [illegible] herb or under-shrub, 60-90 cm tall. Branches clothed with appressed pubescence. Leaflets 3, and one petiolulate. Flowers red [illegible] spike-like racemes. Pods deflexed, 4-gonous, pointed appressed hairy 2.5-3 × 0.2 cm. Seeds 2 × [illegible] mm.

Occurs on the Ridge and in waste places near gardens, often in depressed ground.

Flowers and Fruits : Sept.-Feb.
J. K. Maheshwari 727, 765, 1092 Old Delhi Ridge

T. astragalina DC. Prodr. 2 : 228, 1825 ; Gillett in Kew Bull. Add. Ser. 1 : 110, 1958

T. hirsuta sensu Baker in FBI. 2 : 98, 1876, in part (non Linn.).

A bushy herb or undershrub, 0.6-1.2 m. tall. Stems with grey or brown pubescence. Leaflets 5-11, opposite, 3-4 × 1.5 cm. Flowers vermilion-red, crowded in erect racemes. Pods 1.2-2 × 0.3-0.35 cm., densely hairy pointing downwards. Seeds 2 × 1.5 mm.

Common on the Ridge during the monsoon period, in shallow depressions and amongst bushes.

Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 462, Ridge

T. tinctoria Linn. Sp. Pl. 751, 1753, in part ; FBI 2 : 99 ; FUGP 1 : 254 ; Parker, For. Fl. 131 ; Gillett, op. cit. 106

An undershrub or shrub. Leaves turning black when dried. Leaflets [illegible] bluish green. Flowers pink, in spike-like racemes. Pods 2-3.5 × [illegible] 0.5 cm., glabrous, pointed, brown.

Planted and wild on the Ridge and in the neighbouring hilly tracts.

Local name : Lool
Flowers : Rainy season. Fruits : Cold season.
J. K. Maheshwari 940, Qutab.

9. Psoralea Linn.

Leaves simple : young parts clothed with dark purple pubescence . . . . . *P. corylifolia*
Leaves compound : young branches minutely prickly . . . . . *P. plicata*

P. corylifolia Linn. Sp. Pl. 764, 1753 ; Royle, Ill. 191 ; FBI 2 : 3 ; FL OP 1 : 241.

An erect, woody herb, 30-100 cm. tall with horizontally spreading gland-dotted branches. Young parts clothed with appressed dark purple pubescence. Leaves simple, shortly petiolate, broad ovate to roundish, repand-toothed, gland-dotted. Flowers purple, in axillary long-peduncled heads, bracteate. Ovary 1-ovuled.

Rare : met with in dry, waste and disturbed gravelly areas.

Flowers : Feb.-March.

J. K. Maheshwari 1384, University Compound.

P. plicata Delile, Fl. Egypte 252, t. 37, f. 3, 1813 ; Parker, For. Fl. 128.

A bushy, much-branched undershrub. Young branches with minute prickles. Leaflets 3, obovate, undulate or crisped. Flowers pale violet in axillary and terminal racemes. Calyx accrescent. Standard white. Wings and keel coloured dark violet above. Anthers pale yellow. Ovary shortly stipitate, style curved. Pods as long as the calyx, oblong-globose, 1-seeded, 5 × 3 mm.

The plant has been collected from one spot only 'Bharoli ka Rakba' near Railway Chowki No. 6 (Azadpur-Karnal Road) on dry soil in waste land. Young pods yield a yellow dye.

Flowers and Fruits : May.

J. K. Maheshwari 1018, Karnal Road.

10. Sesbania Scop. nom. cons.

Prickly shrubs or undershrubs . . . . . *S. bispinosa*
Unarmed shrubs or small trees . . . . . *S. sesban*

S. bispinosa (Jacq.) Fawcett & Rendle, Fl. Jam. 4 : 24, 1920 ; Bor. Man. Ind. For. Bot. 92 ; Santapau in RBSI 16(1) : 65, 1953.

Aeschynomene bispinosa Jacq. Ic. 3 : 13, t. 564, 1793.

Sesbania aculeata Pers. Syn. 2 : 316, 1807 ; FBI 2 : 114 ; FL OP 1 : 243.

An erect, weak-stemmed shrub. Branches and leaf rachis prickly. Leaflets several. Flowers yellow. Pods long, narrowly linear, subtorulose.

Found along canal banks and also in cultivated and fallow fields

Local name : Dhedhan
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 446, along Najafgarh Canal

S. sesban (L.) Merr. in Philip. Jour. Sci. (D.) [illegible] 245, [illegible] 2 : Bor. [illegible] Bot. 9 : Benthall, Trees [illegible] 43.

Sesbania aegyptiaca Lina. Sp. Pl. 714, 1753.

S. aegyptiaca Pers. Syn. 2 : 316, 1807 ; FBI 2 : 114 ; FUGP 1 : 242.

A glabrous, soft wooded, large shrub or small tree. Leaflets many, [illegible] 0.4-0.6 cm., linear-oblong. Flowers pale yellow, mottled or [illegible] flushing. Pods 15-23 × 0.4 cm., torulose, twisted, many-seeded.

Cultivated in the city and neighbouring villages as hedge for its quick growth and shade-providing capacity. An excellent gunpowder charcoal is made from its soft, white wood.

Local name : Jati, Rawasan
Flowers and Fruits : Cold season

Flowers yellow dotted with purple . . . . . *S. sesban* var. *picta*
Flowers dark maroon or purple outside . . . *S. sesban* var. *bicolor*

S. sesban Merr. var. **picta** Santapau, Pl. Saur. 14, 1953.

S. aegyptiaca Pers. var. *picta* Prain in JASB 66 : 367, 1897 ; FUGP 1 : 242.

Grown commonly as a hedge around bungalows and fields and also cultivated.

Local name : Rawasan
Flowers and Fruits : Cold season
J. K. Maheshwari 567, Azadpur Road ; 744, Kamla Nagar

S. sesban Merr. var. **bicolor** (Wt. & Arn.) F. W. Andr. in Kew Bull. 93, 1953.

S. aegyptiaca Pers. var. *bicolor* Wt. & Arn. Prodr. 214, 1834 ; FUGP 1 : 243.

Grown commonly as a hedge along roadsides and fields. Also cultivated for shade. During winter birds are attracted by the dark maroon flowers.

Local name : Jati, Rawasan
Flowers and Fruits : Cold season
J. K. Maheshwari 580, Bela

11. Tephrosia Pers. nom. cons.

Leaves simple

T. strigosa

[illegible]

T. strigosa [illegible]

A [illegible] branched stouter herb [illegible] Leaves [illegible] 1.6 × 0.14-0.6 cm. Flowers pale [illegible] in long [illegible] rodicels. Pods [illegible] 2.2-3 × 0.4 cm. pointed & [illegible] covered

Common [illegible] during the monsoon period on the Ridge [illegible] hidden amongst grasses and [illegible]

Flowers and Fruits : Aug.-Oct
J. K. Maheshwari 309, 756

T. villosa (Linn.) Pers. Syn. 2 : 329. 1807 ; FBI. 2 : 113 ; FUGP. 1 : 245.
Galega villosa Linn. Syst. 1172. 1759.

An erect or diffuse undershrub. Leaflets 9-31. Flowers pink or pale violet, in erect racemes. Calyx villous. Pods deflexed, soft tomentose, 2.5-3.5 × 0.5 cm.

Common on the Ridge on dry, gravelly soils and the steep slopes of rocks in crevices. The flowers open in the evening.

Flowers and Fruits : Rainy season
J. K. Maheshwari 274, Ridge

T. purpurea (Linn.) Pers. Syn. 2 : 329. 1807 ; FBI. 2 : 112 ; FUGP. 1 : 245 ; Parker, For. Fl. 133.
Cracca purpurea Linn. Sp. Pl. 752. 1753.

A suberect, much-branched robust herb or undershrub. Leaflets 7-13, obovate to oblanceolate. Flowers red or purplish, in leaf-apposed racemes or fascicled. Pods 4-5 × 0.4-0.5 cm., glabrescent.

Common on dry, gravelly, sandy and other soils in open places of the Ridge and in waste ground. The roots are used in medicine. An extract from the pods is said to be useful in relieving bodily pains and inflammation troubles.

Local name : Jhojhru, Pawad, Jangli-mothar, Sarphonka
Flowers and Fruits : June-Oct
J. K. Maheshwari 148, Ridge

T. pumila Pers. Syn. 2 : 330. 1807 ; FUGP. 1 : 245.
T. purpurea Pers. var. *pumila* Baker in FBI. 2 : 113. 1876.

A small, diffuse, deep-rooted herb. Leaflets 5-9, downy, oblanceolate,

[illegible] Pods [illegible]

[illegible]

J. K. Maheshwari [illegible]

12. Millettia Wt. & Arn.

M. [illegible] Wt. & Arn. [illegible] Benthall, Trees Cult. 145.

[illegible] glaucous. Flowers [illegible] Leaflets [illegible] oval-elliptic, glaucous. Flowers [illegible] in pendulous racemes. Pods [illegible] cm. [illegible] to the base.

Planted in gardens for its beautiful flowers.

Fruits: Aug.

J. K. Maheshwari 707.

13. Zornia J. F. Gmel.

Z. diphylla (Linn.) Pers. Syn. 2: 318, 1807; FBI. 2: 147; FUGP. [illegible] 68.

Hedysarum diphyllum Linn. Sp. Pl. 747, 1753.

A [illegible], diffuse herb. Leaflets 2, 2-4.5 × 0.4-0.6 cm., puncture beneath. Bracts large, geminate. Flowers yellow, 7 mm. long. Pods [illegible] prickly.

Common on the Ridge and abundant in places under shrubs. Also found in fallow and cultivated fields as well as in waste places.

Flowers and Fruits: Rainy season.

J. K. Maheshwari 464, Ridge.

14. Aeschynomene Linn.

A. indica Linn. Sp. Pl. 713, 1753; FBI. 2: 151; FUGP. 1: 270; Merr. Enum. 2: 282.

A shrubby, water-loving annual. Leaflets numerous, small. Flowers yellow veined with purple. Pods 4-5.5 × 0.4-0.5 cm., 6 to 10-jointed, dotted with black.

Common along canal banks. The basal part of the stem near water is swollen and bears bacterial nodules. Used as fodder.

Local name: Dudhen, Phulan.

Flowers and Fruits: July-Nov.

J. K. Maheshwari 447, Najafgarh.

15. Alhagi Desv.

A. pseudalhagi (Bieb.) Desv. Jour. de Bot. 4: 120, 1813.

[illegible]

J. K. Maheshwari 47 684 [illegible] Canal Banks

16. **Desmodium** Desv. [illegible]

W[illegible] [illegible] herbs. Leaflets 3

Erect herbs or undershrubs. Leaves simple — *D. triflorum*

Petioles with broad wings

Petioles not winged — *D. pseudo-triquetrum*, *D. gangeticum*

D. triflorum (Linn.) DC. Prodr. 2 334 1825 FBI 2 [illegible] FLGP [illegible] 285

Hedysarum triflorum Linn. Sp. Pl. 749, 1753

A much-branched, gregarious [illegible] trailing herb, rooting at the nodes. Leaflets obovate, obcordate, 5-8 × 5-8 mm. Flowers pink or purplish 1-3 in the axils of leaves. Pods 1-1.5 × 0.3 cm. curved, flat, incurved on the lower edge, 3 to 5-jointed. Seeds brown.

Common in lawns and pasture fields. Produces an excellent green turf and can serve as an efficient soil binder.

Flowers and Fruits: During rains and early winter.
J. K. Maheshwari 533, Timarpur.

D. pseudo-triquetrum DC. Prodr. 2 326. 1825; FLGP [illegible] 286; Parker For. Fl. 154

D. triquetrum Baker in FBI. 2 : 163, 1876, in part.

A diffuse undershrub. Leaves unifoliolate; petioles broadly winged. Pods flat, 6 to 8-jointed, with a line of appressed hairs along the sutures.

Flowers : Rainy season

D. gangeticum (Linn.) DC. Prodr. 2 327 1825; FBI 2 168 FLGP [illegible] 286; Parker, For. Fl. 155

Hedysarum gangeticum Linn. Sp. Pl. 746, 1753

An erect or decumbent undershrub or shrub, 60×20 cm. [illegible] Leaves

[illegible]

Local name : Sarnghas
Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 30[illegible] at Bagh Harla (Aravalli)

17. **Alysicarpus** Desv. nom. cons.

Calyx as long as the first joint of pod
  Pods moniliform — *A. monilifer*
  Pods not moniliform — *A. vaginalis*
Calyx much longer than the first joint of pod
  Flowers usually in pairs on spike-like, lax racemes; pods usually exserted — *A. bupleurifolius*
  Flowers in spike-like, rather dense racemes; pods included or slightly exserted
    Joints of pods finely reticulate-veined — *A. longifolius*
    Joints of pods transversely and deeply plicate — *A. rugosus*

A. monilifer DC. Prodr. 2: 353, 1825; FBI. 2: 157; FUGP. 1: 276.

A prostrate, much-branched, deep-rooted herb. Stems densely tufted. Leaves simple, oblong, obtuse, often cordate. Flowers pink. Calyx persistent. Pods distinctly moniliform, 2 to 6-jointed; segments subglobose, densely clothed with short, hooked hairs.

It appears during the rains in grassy places, often associated with other turf-forming leguminous. Used as fodder.

Local name : Chatta ki ghas ; Jhuhughas
Flowers and Fruits : Sept.-Nov.

A. vaginalis DC. Prodr. 2: 353, 1825; FBI. 2: 158; FUGP. 1: 277; Sanjappa in RBSI. 16(1): 69, 1953.

An erect or prostrate herb, 30-60 cm. tall. Leaves very variable in size and shape, suborbicular or broad oblong to oblong and oblong-lanceolate. Flowers small. Pods subterete, 6 to 8-jointed, rather crowded at the ends of branches.

Common all over in open pastures and in lawns, often amongst grasses and associated with other pasture, leguminous plants.

Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 779, University Campus, 489

A. [illegible] [illegible]

A. bipleurifolius DC. [illegible]

Flowers and Fruits : Aug.-Oct
J. K. Maheshwari 86 , 392. [illegible]

A. longifolius Wt. & Arn. Prodr 233, 1834 ; FB 2 : 159 ; [illegible] : 278

A stout, erect herb, 30-150 cm. tall. Leaves [illegible] Stipules large. Flowers in long, spiciform racemes. [illegible] Pods moniliform.

Occurs less commonly than other species, generally amongst grasses.

Flowers : Sept.-Nov
J. K. Maheshwari 161, Shahdara

A. rugosus DC. Prodr. 2 : 353, 1825 ; FBI. 2 : 159 ; FUGP. 1 : 278

An ascending herb. Leaves oblong or lanceolate. Flowers in long spike-like racemes, appressed to the rachis. Pods nearly concealed in the calyx, apiculate, 2 to 5-jointed, transversely rugose.

Found occasionally during the post-monsoon period.

Local name : Shevra
Flowers and Fruits : Sept.
J. K. Maheshwari 543, I.A.R.I.

18. Arachis Linn.

A. hypogaea Linn. Sp. Pl. 741, 1753 ; Merr. Enum. 2 : 283 ; Bailey, Man. Cult. Pl. 554.

A prostrate, diffuse or erect annual, 30-60 cm. tall. Leaves [illegible] Leaflets 3.5-5 × 2-2.5 cm., oval to oval-obovate. Flowers yellow, showy, ephemeral. Pods 1 to 3-seeded, constricted between the seeds, the pedicels elongate rapidly and soon after fertilization enter the ground where the ovary ripens into the reticulated pod. Seeds edible.

Cultivated for its pods, kernels are eaten raw or roasted.

Local name : Mungphali
Flowers and Fruits : Aug.-Nov
J. K. Maheshwari 357, Shahdara

[illegible]

19. [illegible]

A precaterius [illegible] Sp. [illegible] 1753 [illegible] FBI 2 [illegible] FUGP [illegible]

[illegible]

Local name : Mulayti , Ratti , Gurmadi , Chirmichi
Flowers : Aug Sept Fruits : Cold season
J K Maheshwari 1270 Ridge

20. Cicer L.

C arietinum Linn. Sp. Pl. 738, 1753 ; FBI 2 : 176 ; FUGP [illegible] 256

A much branched grandular-pubescent annual. Leaflets [illegible] 0.5-0.7 cm., closely serrate. Flowers pink, blue or white. Pods [illegible] about 2.5 - 5 cm. Seeds reddish brown, white or black.

Cultivated during the cold season for the seed which is eaten by human beings and also fed to horses. The vegetative parts are used as fodder.

Local name : Chana
Flowers and Fruits : Cold season
J. K. Maheshwari 611

21. Vicia Linn.

Leaflets 1-3 pairs — *V. faba*
Leaflets 5-12 pairs :
Flowers whitish, small ; pods 2-seeded — *V. hirsuta*
Flowers reddish-blue, larger ; pods more than 2-seeded — *V. sativa*

V. faba Linn. Sp. Pl. 737, 1753 ; FBI. 2 : 179 , FUGP 1 : 259

An erect glabrous, very leafy annual. Leaflets oval to oblong. Stipular nectaries conspicuous. Flowers dull white with a large, purplish spot. Pods large, thick.

Cultivated during the cold season for its young pods which are eaten as vegetable. It is available in the market during the months of February and March.

Local name : Bakla sem , English name : Broad beans
Flowers and Fruits : Cold season

V. hirsuta (Linn.) S. F. Gray, Nat. Arr. Brit. Pl. 2 : 614, 1821; FBI 2 : 177 ; FUGP. 1 : 258.

[illegible]

J. K. Ma[illegible]

[illegible]

Local name : Chanamasur : Mar[illegible]
Flowers and Fruits : Jan.-Mar[illegible]
J. K. Maheshwari 1895 [illegible] ma pur

22. **Lens** Mi[illegible]

L. culinaris Medik. in Vorle. Churpf. Phys. Ge[illegible] 2 : 36 : 1787 : Bu[illegible] Man. Cult. Pl. 553

L. esculenta **Moench. Meth.** 131 : 1794 : FUGP 1 : 757

An erect or partially trailing herb. Leaflets 4-6 pairs, each [illegible] a tendril or bristle. Flowers pale purple. Pods compressed [illegible] Seeds 2, lenticular.

Cultivated for its edible seeds. The leaves and stems are g[illegible] fodder to cattle.

Local name : Masur
Flowers and Fruits : Cold season
J. K. Maheshwari 764

23. **Lathyrus** Linn.

Leaflets 0 ; stipules leaf-like ; flowers yellow . . . . . *L. aphaca*
Leaflets 2 ; flowers blue or reddish-purple . . . . . *L. sativus*

L. aphaca Linn. Sp. Pl. 729. 1753 ; FBI 2 : 179 ; FUGP 1 : 76[illegible]

An annual with slender, branching stems. Stipules modified [illegible] leaves, about 3×2 cm. Leaves reduced to a tendril. Flowers yel[illegible] Pods linear-oblong, 2.5-3×0.6 cm.

A winter weed in cultivated and fallow fields, lawns [illegible] waste places. Used as fodder.

Local name : Pattesi
Flowers and Fruits : Jan.-March

24. Pisum [illegible]

[illegible] *P. sativum*
P. arvense

[illegible] Sp. Pl. [illegible] 1753 ; BI. 2 : 18 ; FI. GP. 1 : 261

P. sativum Linn. Sp. Pl. [illegible] 1753 ; BI. 2 : 18 ; FI. GP. 1 : 261

A more or less [illegible] plant. *P. arvense* Linn. [illegible] Flowers variegated [illegible] Leaflets [illegible] oblong. Flowers variegated [illegible] Pods [illegible] seeds round, white.

[illegible] in Tomarbar in Khadar fields along the banks of the Jamuna River and in [illegible] areas of the district. Used as fodder. The [illegible] as vegetable and the pods are sold to the market for peas.

Local name: Matar. English name: Garden Pea.

Flowers and Fruits: Jan.-March.

J. K. Maheshwari 604 : 162

P. arvense Linn. Sp. Pl. 727 : 1753 ; Royle, Ill. 200 ; BI. 2 : 181 ; FI. GP. 1 : 261

A smooth, glaucous annual. Stipules large, ovate. Leaflets 4-6 [illegible] ending in a branched tendril. Standard pink. Wings deep purple. Pods reticulate. Seeds angled, greenish-yellow, mottled with red.

Grown as a winter season fodder in the district. Royle [illegible] indigenous in the Jamuna-Khadar area near Delhi, where it is known as "Urra mattar".

Flowers and Fruits : Jan.-March.

25. Tetranous Sw.

T. labialis (Linn. f.) Spreng. Syst. 3 : 235, 1826 ; FUGP. 1 : 233.
Glycine labialis Linn. f. Suppl. 325, 1781.

A creeping, spreading or twining herb. Stems appressed-hairy. Leaflets 3, [illegible] pubescent beneath. Flowers pink, [illegible] axillary racemes. Pods 3-7 × 0.3-0.4 cm., [illegible], appressed-hairy, the [illegible] at right angles to the axis of the pod.

[illegible]

Flowers and Fr[illegible] Sept.-Nov.

J. K. Maheshwari 1187. Rashtrapati Gardens.

26. **Mucuna** Adans. [illegible]

M. pruriens Fisch. Bot. Mosc. 2 : 348, 1830-1831 ; Santapau in RBSI 16(1) : 54 : 1953. Bot. Man. Ind. For. Bot. 99.

M. pruriens **Baker in FBI. 2 : 187, 1876. FIJCP** 1 : 232 (non DC).

A more or less extensive climbing annual. Leaflet 3, ovate-rhomboid. Flowers dark purple, in large, drooping racemes. Pods 5-10 × 1.5-2 cm., 4-6-seeded, S-shaped, clothed with dense pale brown or rusty brown hairs. Seeds with an oblong funicular hilum.

Found in the hedges of gardens on Karnal Road, climbing upon trees and shrubs. The fruits develop after leaf fall. The bristles cause an intense skin irritation which continues for hours, and hence the plant should be carefully handled.

Local name : Kaunch.
Flowers : Rainy season. Fruits : Cold season.
J. K. Maheshwari 508 ; 560.

27. **Erythrina** Linn.

Medium-sized trees ; flowers appearing before the leaves . . . . . *E. variegata* var. *orientalis*

Small or medium-sized trees ; flowers appearing with the leaves :
Trees ; leaflets acute . . . . . *E. suberosa*
Shrubby trees ; leaflets abruptly acuminate . . . . . *E. blakei*

E. variegata Linn. var. **orientalis** (Linn.) Merr. Interpret. Herb. Amb. 276, 1917 & Enum. 2 : 306. Santapau in RBSI 16(1) : 75, 1953.

E. corallodendron Linn. var. *orientalis* Linn. Sp. Pl. 706, 1753.

E. indica Lamk. Encycl. 2 : 391, 1786.

A moderate-sized tree ; trunk armed with numerous prickles. Leaflets broad ovate to rhombic-ovate, nearly as long as broad. Flowers bright scarlet, showy, numerous. Calyx spathaceous.

Planted in gardens and near bungalows. Several trees can be seen in the campus of Delhi University and Rashtrapati Bhavan. The flowers appear on leafless branches and are visited by birds.

Local name : Rakta-madar.
Flowers : March-April.
J. K. Maheshwari 637.

E. suberosa Roxb. Hort. Beng. 53, 1814, nom. nud. & Fl. Ind. 3 : 253

[illegible] 189 [illegible] 138 Parker [illegible] 158 Blatt [illegible]

[illegible] Tree [illegible] small tree. Trunk [illegible] Leaflets [illegible] the leaves [illegible] and public gardens [illegible]

Flowers [illegible]

[illegible] Maheshwari [illegible] Parker [illegible] 11 150, 1918 ; Blatt & M[illegible] 57 [illegible] Leaves rhomboid, [illegible]

[illegible] in public and private gardens

Flowers March-May
J. K. Maheshwari 1430

28. **Pueraria** DC.

P. thunbergiana (Sieb. & Zucc.) Benth. in JLS. 9 : 122, 1867 ; Baker, Man. [illegible] Pl. 577

Pachyrhizus thunbergianus Sieb. & Zucc. in Abh. Akad. Muench. 4(3) : 237, 1846

Pueraria hirsuta Schneid. Ill. Handb. Laubholzk. 2 : 114, 1907 (non Kurz).

A perennial, long-running, twining, hairy shrub. Leaflets 3, large, broad ovate to rhombic-ovate, 8-15 × 6-10 cm., stipellate. Flowers purple, in long, dense, axillary racemes. Pods flat, hairy, oblong-linear.

Native of China and Japan. Grown in the fields of Agronomy Division, I.A.R.I., where it has shown a grand performance and has been recommended for soil conservation.

English name: Kudzu vine
Flowers and Fruits : Late summer
J. K. Maheshwari 1411

29. **Butea** Roxb. ex Willd. nom. cons.

B. monosperma (Lamk.) Taub. in Engl. & Prantl, Nat. Pflam. 3(3) : 366, 1894 ; Blatt. & Mull. op. cit. 12, t. 7

Erythrina monosperma Lamk. Encycl. 2 : 391, 1786.

Plaso monosperma Kuntze, Rev. Gen. 1 : 202, 1891

Butea frondosa Roxb. Pl. Cor. 1 : 21, 1795 ; FBI. 2 : 194 ; FUGP. 1 : 240

A small or moderate-sized, deciduous tree. Trunk often crooked, bark red. Leaflets 3, coriaceous, broadly obovate from a cuneate or [illegible] base. Flowers bright orange-red, appearing before the leaves, 5-8 cm. long. Pods pendulous, silky-tomentose, 10-13 × 4 cm. Seed 1

[illegible] **Ridge** [illegible]

[illegible]

Local name : [illegible] Dhak Palas [illegible]
Flowers : April-May
J. K. Maheshwari 658, Ridge

30. Dolichos Linn.

D. lablab Linn. Sp. Pl. 725, 1753 ; **FBI.** 2 : 209 ; **FLGP** [illegible] 238
Lablab niger Medik. in Vorles. Churpf. Phys. Oek. 2 : 354, 1787.
A tall, nearly glabrous, twining shrub. Stipules bifid. Leaflets broad ovate or deltoid. Flowers white or pink. Pods flat, beaked 4-5 × 1.6 cm.
Cultivated for its pods which are available during the cold season.

Local name : Sem
Flowers : Sept.-Oct. Fruits : Cold season
J. K. Maheshwari 907

31. Clitoria Linn.

C. ternatea Linn. Sp. Pl. 753, 1753 ; **FBI.** 2 : 208 ; **FLGP** 1 : 230
A rambling, beautiful climber. Leaflets 5-9, oval or oblong. Flowers more or less uniformly white or blue in the standard with white centre, the rest blue or white, solitary, axillary. Pods stipitate, flat.
Cultivated in hedges or on walls. Also found as an escape.

Local name : Gokarni
Flowers and Fruits : Nov.-Feb.
J. K. Maheshwari 275

32. Phaseolus Linn.

Stipules inserted above the leaf bases ; pods cylindric
- Pods nearly glabrous
  - Stipules large, oval . . . . . *P. trilobus*
  - Stipules small, lanceolate . . . . . *P. aconitifolius*
- Pods hairy
  - Seeds black, oblong ; pods long-hairy . . . *P. mungo*
  - Seeds usually green, nearly globular ; pods short-hairy . . . . . *P. aureus*

[illegible]

[illegible] Chawar

[illegible] Sept. Nov.

J. K. M[illegible] University Campus 1257

P. sericifolius Jacq. Obs. 3 2, t. 52, 1768 ; FBI 2 202 ; Dutie & [illegible] & Gard. Crops I 41, t. 11.

A [illegible] or scandent, hairy annual. Stipules inserted [illegible] chocolate. Leaflets 2 to 7-lobed in the upper par[illegible] 3-lobed, the lobes narrow and long. Flowers yellow, arranged [illegible] axillary peduncles. Pods straight, cylindrical, torulose, smooth [illegible]

Grown as a rainy season crop, often mixed with Bajra on damp [illegible] brown, sandy soil. The grain is an article of human and [illegible] food.

Local name : Moth ; English name : Moth bean
Flowers and Fruits : July-Oct.
J. K. Maheshwari 187 Azadpur ; 1315 Najafgarh

P. mungo Linn. Mant. 101 1767 ; FBI 2 203 ; FUGP 226.

A trailing, hairy annual. Flowers yellow. Pods hairy, nearly erect, erect. Seeds usually black, sometimes greenish.

Grown as a mixed crop in fields of Jowar and Bajra.

Local name : Urd ; English name : Black gram
Flowers and Fruits : Rainy season

P. aureus Roxb. Hort. Beng. 55, 1814, nom. nud. & Fl. Ind. 3 297, 1832 ; Bailey, Man. Cult. Pl. 575

P. mungo auct. (non Linn.).

P. radiatus auct. (non Linn.).

A much-branched, suberect, hirsute annual. Stipules conspicuous. Leaves dark green. Leaflets roundish, deltoid or rounded at the base. Flowers yellow, in capitate racemes. Pods clothed with long silky hairs. Seeds usually green.

Cultivated as a rainy season crop, often mixed with other edible legumes in fields of Cawar, Bajra, Jowar, cotton, etc. The grain is much [illegible] in the area as a 'dal'.

[illegible] Murg.
[illegible] Sept.
J. K. Maheshwari [illegible] Azadpur

P. lunatus [illegible]
[illegible] Seeds [illegible]
[illegible] the [illegible] pods which are used [illegible]

P. vulgaris [illegible]
A suberect [illegible] Flowers white [illegible]
Pods [illegible] glabrous.
Cultivated [illegible] as vegetable [illegible]
[illegible] February to April.

Local name [illegible] English name Futur beans.

33. Vigna Sav.

V. sinensis (Linn.) Savi ex Hassk. Cat. Hort. Bogor. 279, 1844 ; Sarkar in RBSI. 16(1) 80, 1953.

Dolichos sinensis Linn. Cent. Pl. 2 : 28. 1756.

Vigna cajang Walp. in Linnaea 13 533, 1839 ; FBI 2 205 ; FUGP I : 227.

A suberect or twining annual. Leaflets 3, entire or slightly lobed. Flowers yellow or reddish. Pods linear, subtorulose.

Cultivated during the rainy season for its grain, often mixed with millets and other crops.

Local name : Lobia ; Rawas
Flowers and Fruits : June-Oct.
J. K. Maheshwari 188, Azadpur

34. Rhynchosia Lour. nom. cons.

Glabrescent herbs ; seeds non-strophiolate . . . . . *R. minima*
Hairy herbs, seeds strophiolate . . . . . *R. capitata*

R. minima (Linn.) DC. Prodr. 2 : 385, 1825 ; FBI 2 223 ; FUGP I : 222.

Dolichos minimus Linn. Sp. Pl. 726, 1753.

A spreading or twining, glabrous, slender annual. Leaflets 3, deltoid at the base, minutely yellow gland-dotted beneath. Flowers yellow, in lax racemes. Pods 1-2 × 0.5 cm., usually 2-seeded.

Common during the rains. In the absence of proper support, it spreads on the ground. On the Ridge it twines around herbs, shrubs and [illegible]

Flowers and Fruits : May-Nov.

[illegible]

[illegible] Leaflets [illegible] flowered racemes [illegible] flowers [illegible] heads of flowers about [illegible] cm. [illegible] clothed with spreading hairs [illegible]

[illegible] Naraigarh [illegible] in fallow and cultivated fields [illegible] Serves as fodder

Local name : Papro ; Papta
Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 1316, Najafgarh

35. Alysicarpus W.L. & Arn.

A. elongatus Benth. in Mag. Pl. Jungh. 243, 1851 ; FBI. 2 : 215

A herbaceous twiner clothed with fine spreading hairs. Leaflets 3, narrowed from the middle to a rounded base, pointed. Flowers long-peduncled. Pods oblong.

Found rarely in the area.

Flowers : Aug.-Sept.
J. K. Maheshwari 409, University Campus

36. Cajanus DC. nom. cons.

C. cajan (Linn.) Millsp. in Field Columb. Mus. Bot. 2 : 53, 1900 ; Merr. Enum. 2 : 314 ; Santapau in RBSI. 16(1) : 88, 1953

Cytisus cajan Linn. Sp. Pl. 739, 1753

Cajanus indicus Spreng. Syst. 3 : 248, 1826 ; FBI. 2 : 217 ; FLGP 1 : 213

An erect shrub 1.5-2.4 m high. Leaflets 3, oblong-lanceolate. Flowers yellow in corymbose racemes. Pods narrowed at the ends, tomentose.

The two varieties known locally as Thuar and Arhar are cultivated as cold season crops, often mixed with *Sorghum vulgare* Pers. and *Pennisetum typhoides* Stapf & C. E. Hubb.

Local name : Arhar ; Thuar
Flowers and Fruits : Nov.-July
J. K. Maheshwari 190, Azadpur ; 1085

37. Derris Lour. nom. cons.

D. scandens (Roxb.) Benth. in JLS. 4 (Suppl.) : 103, 1860 ; FBI. 2 : 240 ; FLGP 1 : 268

Dalbergia sissoo Roxb. [illegible]

A large [illegible] tree. [illegible] pend[illegible] Leaflets 9 [illegible] Flowers [illegible] pods thin, flat, [illegible] year.

Grows as climber on walls. [illegible] green [illegible] foliage.

Flowers : May-Sept. Fruits : Oct.-Dec.

J. K. Maheshwari 1107, Saidanjang [illegible]

38. Pongamia Vent. nom. cons.

P. pinnata (L.) Pierre, Fl. For. Cochinch. Sub. 1 : 385 (1892) [illegible] Santapau in RBSI. 16(1) : 86 (1956).

Cytisus pinnatus Linn. Sp. Pl. 741, 1753.

Pongamia glabra Vent. Jard. Malm. 28, t. 28, 1803 ; FBI. 2 : 240 ; FUGP. 1 : 267.

A moderate-sized, glabrous, deciduous tree. Bark soft, grey. Leaflets 2-3 pairs, variable in shape. Flowers lilac-rose or white tinged with violet or pink, in pendulous racemes. Calyx truncate, deep red. Pods thick, hard, 6-11.5 x 2-2.5 cm.

Planted in public and private gardens, near houses and along roadsides.

Local name : Papri

Flowers and Fruits : March-July

J. K. Maheshwari 231, Shahdara

39. Dalbergia Linn. f. nom. cons.

D. sissoo Roxb. Hort. Beng. 53, 1814, nom. nud. & Fl. Ind. 3 : 223, 1832 ; FBI. 2 : 231 ; FUGP. 1 : 264 ; Parker, For. Fl. 166.

A small or medium-sized tree. Bark grey. Leaflets 3-5, acuminate. Flowers yellowish-white. Pods 4-7 x 0.7-1 cm., strap-shaped, 1 to 3-seeded.

Planted along roadsides, in villages and introduced on the Ridge. Flowers appear suddenly and fruiting takes place in a short time.

Local name : Shisham

Flowers : March-June. Fruits : July-Aug.

J. K. Maheshwari 14 ; 967 ; 1086

40. Sophora Linn.

Leaflets oblong-orbicular ; flowers yellow — S. [illegible]

Leaflets oblong-elliptic to subspatholate ; flowers violet-blue — S. [illegible]

S. tomentosa Linn. Sp. Pl. 373, 1753 ; Merr. Enum. 2 : 270 ; Ruiz & Raiz. 50, Pl. 16.

[illegible] St. Stephen's College Campus

[illegible] Cat. Hort. M[illegible] 48 [illegible] Prodr. [illegible] A. Rai [illegible] Pl. I

[illegible] Rai P. Mait. [illegible] 38

[illegible] 1 cullets 9 seeds [illegible] 5-6 [illegible] 2 cm [illegible] racemes. Pods woody, hoary tomentose [illegible] about 1 cm. long

[illegible] bright red about 1 cm. long

[illegible] A few trees are growing in the shrubbery of Rashtrapati Bhavan Campus

Fruits June

J. K. Maheshwari 692

Some trees of *Lonchocarpus speciosus* Bolus (JLS 25 [illegible] 6 [illegible] 1889) have been planted in **Rashtrapati Bhavan Campus** for their beautiful sweet-scented blue flowers.

38. Caesalpiniaceae

Leaves apparently simple, shallowly or deeply divided into 2 lobes — *Bauhinia*

Leaves compound

- Leaf rachis ending in spine, the rachilla long, flat, bearing numerous small leaflets — *Parkinsonia*
- Rachis and rachilla not as above
  - Leaflets two — *Hardwickia*
  - Leaflets more than two
    - Leaves once pinnate
      - Thorny shrubs — *Haematoxylon*
      - Unarmed herbs, shrubs or trees
        - Petals absent; calyx petaloid; fertile stamens 2-8 — *Saraca*
        - Petals present; calyx not petaloid
          - Petals 3; fertile stamens 3 — *Tamarindus*
          - Petals 5; fertile stamens 5-10 — *Cassia*
    - Leaves twice pinnate
      - Sepals valvate or subvalvate; stamens included — *Delonix*

Bauhinia [illegible]

Shrubs or climbers

A large woody climber

A small flower [illegible]

Trees

Calyx spathaceous

Calyx splitting into 2 nearly equal reflexed parts

B. vahlii Wt. & Arn. Prodr. 297 (1834); FBI 2 : 279; FUGP [illegible] 297; Bot. & Raiz. 74, f. 48

A massive large-leaved climber. Young parts, petioles and inflorescences grey or rusty pubescent. Leaves variable in size, up to 30 cm., deeply cordate or auriculate; lobes obtuse. Flowers white, fading inwards yellow, in corymbs or corymbose racemes. Pods 15-30 × 5-8 cm., flat, rusty-tomentose.

Planted in gardens. A large specimen is growing over an ancient gate in Qudsia Gardens. It has covered the walls of this gate and flowers in abundance. The flowering period is short and large number of flowers fall.

Flowers : May

J. K. Maheshwari 1378

B. tomentosa Linn. Sp. Pl. 375, 1753; FBI 2 : 275; FUGP 1 : 297; Bot. & Raiz. 68, f. 44

A shrub. Leaves as long as broad or broader than long; lobes obtuse. Flowers sulphur-yellow, usually in leaf-opposed pairs. Calyx spathaceous. Stamens 10. Pods 10-15 × 1-1.4 cm., finely pubescent.

Cultivated in hedges around bungalows and in public gardens.

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 471, Talkatora Gardens

B. variegata Linn. Sp. Pl. 375, 1753; FBI 2 : 284; FUGP 1 : 300; Bla. & Mifl. Beaut. Ind. Tr. 4, t. 1

A small or medium-sized tree. Leaves broader than long. Flowers pink to purple, large, fragrant, the lip often marked red or purple. Calyx spathaceous. Pods 10-25 × 1.5-2 cm., flat, glabrous, black.

Cultivated in lawns and gardens. The flowers appear on leafless branches.

Local name : Kachnar

[illegible] New Delhi

[illegible] 384 [illegible]

[illegible] [illegible] Young parts [illegible] Leaves [illegible] usually [illegible] into 2 [illegible] cm.

[illegible] private and public gardens

[illegible] Kachnar

Flowers : Sept.-Nov.

J. K. Maheshwari 1193, I.A.R.I.

Parkinsonia Linn.

[illegible] Linn. Sp. Pl. 375, 1753 FBI. 2 : 260 ; FUGP. 1 : 303 ; Parker, For. Fl. 173.

A shrub or small tree, up to 5 m. tall, branching near the base. Stems sharp, woody. Rachis flattened, bearing minute, obtuse-ovate leaflets. Flowers yellow. Pods 6-9 × 0.7 cm., turgid, dry, moniliform, with elongated seedless parts.

Grown in public gardens and lawns and in hedges forms elegant appearance. It has been introduced on the New Delhi Ridge near Kitchener Road where it flowers and fruits abundantly.

Local name : Vilayti ashar

Flowers : Nov.-Feb. Fruits : Summer season

J. K. Maheshwari 1073, Ridge ; 1339, University Campus

Haraiwickia Roxb.

[illegible] Roxb. Pl. Cor. 3 : 6, t. 209, 1811 ; Brandis, Ind. Tr. 250.

A large tree. Branchlets slender, drooping. Leaflets two, obtuse, obliquely ovate to trapezoid. Flowers greenish-yellow, in racemes forming a panicle. Pods 6-8 × 1.3-1.5 cm., flat, oblong, parallel-veined.

Planted in lawns and squares of New Delhi.

Fruits : July

J. K. Maheshwari 1138, Lawn near G Block, C.P.W.D., New Delhi

Haematoxylon Linn.

H. campechianum Linn. Sp. Pl. 384, 1753 ; Parker, For. Fl. 181 ; Bentham, Trees Calc. 185.

A thorny shrub. Stems grey, dotted. Leaves pinnate. Leaflets 2 to 3-paired, broad obovate to obovate-oblong. Flowers yellow, in

[illegible]

[illegible] Pods [illegible] seeded

[illegible] hedges and [illegible]

English name : Logwood

[illegible]

J. K. Maheshwari [illegible] Botanical Gardens

Saraca Linn.

S. indica Linn. Mant. 98, 1767 ; FBI 2 : 271 ; Benthall, Tree [illegible] 78 Blatt. & Hill, Bomb. Ind. Tr. 130, t. 27

Jonesia asoca Roxb. in As. Res. 4 : 355 (1795)

A small, evergreen tree forming a dense crown. Leaflets 6-[illegible] oblong or oblong-lanceolate up to 30 × 5 cm. Flowers orange or orange-yellow, changing to vermilion, very fragrant, in dense corymbs, about 10 cm. broad, from the scars of fallen leaves. Calyx tubular, petaloid. Petals absent.

Planted in some gardens ; collected twice from Gulab Bagh near Sabzimandi. The flowers, which are borne in great profusion, are extremely beautiful and delicately scented.

Local name : Ampoch ; Ashok
Flowers : April
J. K. Maheshwari 1383

Tamarindus Linn.

T. indica Linn. Sp. Pl. 34, 1753 ; FBI 2 : 273 ; FloGP 1 : 301 ; Parker For. Fl. 182.

Middle-sized or large tree, with a dense crown. Leaflets 10 to 20-paired, oblong, 1.5 × 0.5 cm. Flowers yellow striped with red. Pods 8-15 × 1.5-2 cm., usually falcate, pulpy inside. Seeds dark brown, shining.

Commonly planted along the streets as an avenue tree and in gardens for its ornamental foliage and edible fruits. A beautiful avenue of tamarinds can be seen on Hardinge Road in New Delhi.

Local name : Imli ; Amli
Flowers : July-Aug. Fruits : Cold season
J. K. Maheshwari 211

Cassia Linn.

Herbs, undershrubs or shrubs
  Leaflets linear-terete ; a shrub . . . *C. artemisioides*
  Leaflets flat :
    Leaf rachis without glands . . . . . *C. obtusa*

[illegible]

[illegible] three anther filaments with a [illegible]

[illegible]

Leaflets 8-14 [illegible] C. [illegible]

Leaflets [illegible], glabrous C. [illegible]

Leaflets rounded, hairy beneath C. [illegible]

Leaflets 8-20 pairs; racemes from scars of fallen leaves C. [illegible]

Bracts small, falling off before flowers; anther filaments [illegible]

Stamens 10, all fertile

Stamens nearly equal in length; pods flat, dehiscent C. *surattensis*

Stamens unequal; pods very long, cylindric, indehiscent C. *fistula*

Fertile stamens 6-7 C. *siamea*

C. artemisioides Gaudich. ex DC. Prodr. 2 : 495, 1825 ; Bailey, Man. Cult. Pl. 586.

A bushy shrub, xerophytic-looking, with silky-grey pubescence throughout. Leaflets 3-6 pairs, narrowly linear, almost terete, 1.5-2.5 × 0.1 cm. Flowers sulphur-yellow, in axillary, corymbose racemes. Fertile stamens 10. Pods flat, 3-4.5 × 0.7 cm., shining brown.

Native of Australia. Cultivated for its fragrant, ornamental flowers.

Flowers : Jan.-March. Fruits : March-May.

J. K. Maheshwari 245, Sunder Nursery ; 1225. I.A.R.I. (Botany Division).

C. obtusa Roxb. Hort. Beng. 31, 1814, nom. nud. ; Wt. Ic. t. 757, 1844 ; FL GP. 1 : 394.

C. obtusata Colad. Hist. Cass. 92, t. 15, 1816 ; FBI. 2 : 264.

This plant was reported to occur near Delhi in the herbarium of Royle. I have not come across it in the field.

A diffuse herb, 30-120 cm. tall. Leaflets 4 to 6-paired, membranous. Flowers pale yellow, in narrow, few-flowered racemes. Pods much-curved, flexible, glabrous.

C. tora [illegible] Sp. Pl. [illegible] FBI [illegible]
RBS 1661 90 [illegible]
[illegible] Linn. sp. P. [illegible]
A herb [illegible] Leaflets [illegible]
with a gland between [illegible]
the 3 upper reduced [illegible]
obliquely septate [illegible]
A [illegible] along roadsides [illegible]
seeming aggressive [illegible]
hedges. The seeds are said to be [illegible]
employed in the preparation of snuff [illegible]

Local name : Pawad ; Chakowar
Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari, 78

C. pumila Lank. Encycl. [illegible] 785 FBI 2 [illegible] FUGP [illegible]
A prostrate ascending or subercct, deep-rooted stout herb [illegible] and branches often reddish-brown. Leaflets [illegible] pairs [illegible] a stipitate gland present at the base of petiole. Flowers [illegible] solitary. Pods 2.5-4 × 0.5 cm., straight flat oblong. Seeds [illegible] polished.

Common on the Ridge and in crevices of rocks, shade of trees and shrubs and in the open gravelly soils. Also found in open places on damp, sandy soil often hidden amongst grasses.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 425

C. occidentalis Linn. Sp. Pl. 377, 1753 ; FBI. 2 : 267 ; FUGP 1 : 297 ; Parker, For. Fl. 175

An undershrub, 0.6-1.5 m. tall. Leaves with an ovoid gland at base of the petiole. Leaflets 3-5 pairs, ovate-oblong or oblanceolate. Flowers yellow, in corymbiform axillary clusters. Fertile stamens 6-7. Pods 9-13 × 0.8 cm., transversely partitioned. Seeds 20-30, pale brown.

Common along roadsides, amongst hedges of gardens and in waste places. The plant attracts large number of ants due to nectar secreted by petiolar glands.

Local name : Ban bhates ; Dhadial
Flowers and Fruits : June-Nov.
J. K. Maheshwari 294

C. sophera Linn. Sp. Pl. 379, 1753 ; FBI. 2 : 262 ; FUGP 1 : 293

A shrubby herb. Leaflets 8-12 pairs, oblong-lanceolate, acute or tapering, each with a single gland at base. Flowers yellow, in axillary base racemes. Pods slightly curved, transversely septate.

Commonly planted as a hedge around bungalows.

[illegible]

[illegible] Roxb. [illegible] Blatt. & Mill. [illegible] & [illegible] FBI. [illegible] 261 Blatt. & Mill. [illegible] 20.

A small [illegible] evergreen tree with [illegible] grayish [illegible] bark. [illegible] Leaves contemporary. [illegible] Flowers pink [illegible] leaves contemporary. [illegible] racemes. [illegible] Pods cylindrical, 30-45 cm. long.

Planted in the lawns of gardens for its ornamental flowers and foliage.

Flowers : May-Aug.

J. K. Maheshwari 774

C. javanica Linn. Sp. Pl. 379. 1753. Blatt. & Mill. op. cit. 27, t. 4.

A medium-sized tree. Leaflets 12-20. Flowers and leaves together, pink fading to white. Sepals red. Stamens 10, three with swelling.

Planted in gardens.

Flowers : June

J. K. Maheshwari 691, Rashtrapati Bhavan Campus

C. renigera Wall. Cat. 5307. 1831-2, nom. nud. Benth. in TLS. 27 : 518, 1871 ; FBI. 2 : 262 ; Blatt. & Mill. op. cit. 35, t. 5.

Flowers in racemes, on leafless branches. Sepals red. Stamens 10. Pods smooth.

Planted in gardens.

Flowers : May-June

C. surattensis Burm. f. Fl. Ind. 97, 1768.

C. glauca Lamk. Encycl. 1 : 647, 1785 ; FBI. 2 : 265 (excl. syn. *C. fastigiata* Vahl) ; FUGP. 1 : 292.

A small tree. Leaflets 4-6 pairs, pale green. Flowers yellow, in axillary corymbs. Stamens 10, nearly equal. Pods straight, flat, thin.

Planted as a hedge in gardens.

Flowers : Sept.-Oct.

C. fistula Linn. Sp. Pl. 377, 1753 ; FBI. 2 : 261 ; FUGP. 1 : 291 ; Blatt. & Mill. op. cit. 19, t. 3.

A moderate-sized, deciduous tree with thick yellowish or greenish-grey bark. Leaflets 4-8 pairs, 10-15 × 5 cm. Flowers bright yellow, in long, drooping, lax racemes. Pods 30-60 × 2-2.5 cm., cylindrical, pendulous among leafless branches. Seeds flat, embedded in sweetish pulp.

Occurs in a semi-wild condition on the [illegible] lawns and squares. [illegible] Road. The fruits are [illegible]

Local name: [illegible]
Flowers: [illegible] Fruits: [illegible]
J. K. Maheshwari 8, R. Lee Road, Sri [illegible]

C. alatus Lamk. Encycl. I. 648, 1785; FBI 2: 261; Mat. Med. C. I. P. 586.

A moderate-sized or large tree. Bark grey. Leaves [illegible] eglandular. Leaflets 12-24, oblong. Flowers [illegible] racemes clustered at the ends of branches. Pods [illegible] nearly straight, flat, 20-30 × 1.5 cm., with thickened sutures.

Cultivated in gardens for ornamental purposes and also used in avenues.

Flowers: Summer.
J. K. Maheshwari 661, Talkatora Gardens.

The following species have also been reported under cultivation within the area but have not been noticed by me:

C. didymobotrya Fresen. in Flora 22: 53, 1839; Rock, Legum. Pl. Hawaii 83, t. 33.

C. roxburghii DC. Prodr. 2: 489, 1825; Blatt. & Mill. op. cit. 33.
C. marginata Roxb. Hort. Beng. 31, 1814, nom. nud.; & Fl. Ind. 2: 338, 1832; FBI 2: 262.

C. corymbosa Lamk. Encycl. I. 644, 1785; Bailey, Man. Cult. Pl. 587.

C. eremophila A. Cunn. ex Vog. Syn. Cass. 47, 1837.

C. floribunda Cav. Descr. 132, 1802; Wat. in Webbia 11: 245, 1955.
C. laevigata Willd. Enum. Hort. Berol. 441, 1809.

Delonix Raf.

D. regia (Boj.) Raf. Fl. Tell. 2: 93, 1836; Benthall, Trees Calc. 170; Blatt. & Mill. Beaut. Ind. Tr. 52, t. 10.
Poinciana regia Boj. ex Hook. in Bot. Mag. t. 2884, 1829; FBI 2: 260.

A magnificent tree with an umbrella-shaped crown. Leaves bipinnate, feathery, 60 cm. long. Leaflets about 1.2 × 0.5 cm. Flowers red or orange-red. Pods 30-60 × 5 cm., flat. Seeds numerous, oblong.

Commonly planted in gardens, squares and avenues for ornamental purposes and for the shade given by its dense foliage. The flowering period is irregular, almost throughout the year. The tree often produces vegetative buds after the first few showers.

[illegible] April
[illegible] Sept. Fruits Nov. April
[illegible] 140. [illegible] in campus

Caesalpinia L. sub.

C. [illegible] Lam. Sp. Pl. 380, 1753.
Mandar Roxb. Hort. Beng. 32, 1814, nom. nud. & Fl. Ind. 2 [illegible] 432
C. longifolia Flem. in As. Res. 11 159, 1810 ; FBI. 2 : 254 ; [illegible]

A scandent or straggling prickly shrub. Prickles [illegible]. Pinnae 8-8 pairs. Leaflets 6-10 pairs, oblong-ovate. Bracts caducous. Flowers [illegible] spotted with red or not. Pods 5-8 × 4-5 cm. [illegible] hook armed with sharp, wiry prickles. Seeds 2, polished lead-coloured.

Planted along the boundaries of gardens. It makes an effective hedge. In teratological specimens the inflorescence axis becomes fasciated and bears abnormal flowers.

Local name : Karkonda ; English name : Fever-nut.
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 465, Talkatora Gardens.

[illegible] Linn.

P. pulcherrima Linn. Sp. Pl. 380, 1753 ; Bailey, Man. Cult. Pl. 589.
Caesalpinia pulcherrima Sw. Obs. 166, 1791.

A gaudy, handsome shrub, up to 3 m. tall. Branches prickly, lenticellate. Pinnae 8-16. Leaflets oblique-oblong. Flowers variously coloured in red and orange, long-pedunculated, in large, loose, terminal or axillary racemes. Pods thin, broadly linear.

Said to have been introduced from America. Cultivated for hedges and in lawns and garden shrubberies.

Local name : Gul-mohar.
Flowers and Fruits : April-Dec.
J. K. Maheshwari 469, Talkatora Gardens.

39. Mimosaceae

Tribe 1. *Adenanthereae*. Stamens definite, anthers gland-tipped. Flowers all bisexual.
Upper flowers of spikes bisexual, the lower neuter. *Prosopis*, *Dichrostachys*

Tribe 2. *Mimoseae*. Stamens definite, anthers not gland-tipped. Pod continuous, opening through the sutures. Pods jointed, sutures persistent. *Leucaena*, *Mimosa*

Tribe 3. *Adenanthereae*. Stamens indefinite.
Stamens [illegible] flowers [illegible] globose head [illegible]

Tribe 4. *Ingeae*. Stamens indefinite, monadelphous.
Pods straight [illegible]
Pods curved or twisted [illegible] *Albizia* [illegible]
P. [illegible]

Prosopis Linn.

Prickles small, conical; leaflets 1-2 cm. long; [illegible] *P. [illegible]*

Thorns large, tubulate; leaflets 1.8-3.8 cm. long; pods compressed [illegible] *P. glandulosa*

Armed with thorns or unarmed; leaflets 0.5-3 cm. long; pods compressed [illegible] *P. [illegible]*

P. spicigera Linn. Mant. 68. 1767; Fl. Br. 2. 286; Fl. G.P. 1. 300; Parker, For. Fl. 198; Bor. Man. Ind. For. Bot. 76.

A middle-sized glabrous tree armed with short straight prickles. Bark grey, rough with deep fissures or cracks. Pinnae usually 2 pairs with a gland between each pair. Leaflets 8-10 pairs, 0.5-1.5 × 0.4 cm., obliquely oblong. Flowers yellow in slender spikes. Pods 8-16, 0.5-1 cm., pendulous, torulose, subtorulose or flattish, thick.

Common on the Ridge, easily recognized by its characteristic habit, dark green, dull foliage and flowers in lax spikes. It usually produces conspicuous insect galls on leaf rachis and petiole.

Local name : Janti, Chonkra.
Flowers : May-Aug. Fruits : June.
J. K. Maheshwari 1075, Kitchener Road, Ridge.

P. glandulosa Torr. in Ann. Lyc. N. York. 2. 192. 1828; Parker, For. Fl. 199; Bor. loc. cit.

P. juliflora DC. var. *glandulosa* Cock. in N. Mex. Agr. Expt. Sta. Bull. 15 : 58. 1895.

A large shrub or small tree with straggling or pendulous branches. Spines stout. Pinnae 1-2 pairs. Leaflets 10-18, rather distant, linear-oblong. Flowers creamy yellow in axillary spikes. Pods 13-20 × 0.8 cm., linear, straight or falcate, beaked.

Introduced on the Ridge where it grows well. It is less common than *P. juliflora*.

Flowers and Fruits : April-June.
J. K. Maheshwari 1426, Old Delhi Ridge.

P. juliflora (Sw.) DC. Prodr. 2. 447. 1825; Parker, For. Fl. 200.

Mimosa juliflora Sw. Prodr. 85. 1788.

A small or moderate-sized drought-resistant tree with drooping bran-

[illegible]

[illegible] Leaflets [illegible]

[illegible]

[illegible] Mexico and Central America. It was introduced on the Ridge by the Horticulturist [illegible] and has been [illegible] abundant throughout the central and hot dry areas. It can spread [illegible] ridge and as a shade plant in the rural areas. It can spread [illegible] and has been naturalized. The sweetish pulp inside the pods is eaten [illegible] of seeds. It flowers twice a year.

Local name: Kabu, Likar
Flowers: April-Sept. Fruits: Oct.
J. K. Maheshwari 1343, Ridge

Several forms of *P. juliflora* have been introduced in the arid zones of India. I came across the following ones on the Ridge. Other forms are also seen to occur because differences in pod features and foliage have been noted.

P. juliflora DC var. **velutina** (Wooton) Sarg. Silv. N. Amer. 13: 15, 1902.
P. velutina Wooton, Bull. Torrey Bot. Cl. 25: 456, 1898.
Leaves and inflorescences densely tomentose.

P. juliflora DC.-Mexican form.
Pods indistinctly and interruptedly beaded; beak stout, straight or somewhat sickle-shaped.

Dichrostachys (DC.) Wt. & Arn. nom. cons.

D. cinerea (Linn.) Wt. & Arn. Prodr. 271, 1834; FBI 2: 288; FUGP 1: 310.
Mimosa cinerea Linn. Sp. Pl. 517, 1753.
A large, branched shrub or small tree, resembling an *Acacia* in vegetative condition. Branchlets ending in spines. Bark white, grey or light brown. Leaves pinnate, with stipitate glands at the base of each pair. Leaflets 12-15 pairs. Flowers small, in beautiful spikes, upper ones fertile and yellow, lower ones sterile, with rose-coloured staminodes. Pods curled, twisted, irregularly dehiscent.
Common on the New Delhi Ridge in dry, rocky places. Rare on the Ridge near University.

Flowers and Fruits: Sept.
J. K. Maheshwari 214, New Delhi Ridge.

Leucaena Benth.

L. leucocephala (Lamk.) Wt. in Taxon 10: 53, 1961, in obs.

Mimosa [illegible] Lamk. Encycl. [illegible] 2 291
Leucaena [illegible] Benth. [illegible] Hook. f. and Jackson, Index Kew. 4 [illegible] 1934
FBI 2 [illegible] FUGP [illegible]

A shrub or small tree. Pinnae 4-8 pairs. Leaflets [illegible] Flowers white, [illegible] in a dense globular head. Pods [illegible] flattened, [illegible] linear, flat, [illegible]. Seed [illegible]
Cultivated in gardens and along [illegible]
Flowers [illegible]

J. K. Maheshwari 467, Tuttakore Gardens

Mimosa Linn.

Spreading herbs or undershrubs ; pinnae digitately arranged . *M. pudica*
Erect or straggling shrubs ; pinnae pinnately arranged
Pods with prickly sutures
Pods usually not prickly . . . . . *M. hamata*
. . . . . *M. rubicaulis*

M. pudica Linn. Sp. Pl. 518, 1753 , FBI 2 291 FUGP 1 311
A spreading, diffuse undershrub. Stems and branches prickly and bristly. Leaves very sensitive. Pinnae 4 Leaflets 12-20 pairs. Flowers purplish, in oblong-globular heads Pods flat, 3 to 5-jointed, membranous , margins spinose-bristly

Cultivated in gardens and nurseries or as a pot plant

Local name . Lajwanti , Chu-mur
Flowers and Fruits - Aug.-Nov
J. K. Maheshwari 358, University Gardens

M. hamata Willd. Sp. Pl. 4 : 1033, 1806 , FBI 2 : 291 , FUGP 1 , 312
Parker, For. Fl. 196

An erect, diffuse or straggling shrub, prickly throughout. Pinnae 3-5 pairs. Leaflets 6-10 pairs. Flowers red. Pods 4-8 1 cm flat, curved prickly at the edges and on the stalk, 4 to 8-jointed.

Common all over the New Delhi Ridge often in association with other thorny shrubs of the area Not so common on the Ridge near the University

Flowers and Fruits . Sept.-Oct
J. K. Maheshwari 470, New Delhi Ridge

M. rubicaulis Lamk. Encycl. 1 20. 1783 FBI 2 291 , FUGP. 1 , 311 ,
Parker, For. Fl. 196.

An erect or straggling shrub. Prickles throughout on stems, branches and leaf rachis recurved Pinnae 8-12 pairs. Leaflets 8-12 pairs Flowers rose-coloured, fading to white, in solitary or fascicled heads Pods oblong-linear, curved, gaping, sometimes prickly on the margins

Commonly grown as a hedge around gardens and fields and along small water channels in the villages

[illegible] Chakur
[illegible]
J. K. Maheshwari [illegible] Azadpur

Acacia Willd.

1. Flowers [illegible] in [illegible] spikes [illegible] A. farnesiana
2. Pods thick, [illegible] black, pulpy inside
2. Pods flat, moniliform, with deep sutures between the seeds. A. arabica
2. Pods thin, flat, straight A. senegal
1. Flowers in globose heads, forming a terminal panicle A. leucophloea
1. Flowers in axillary spikes
2. Leaves reduced to phyllodia A. mearnsiana
2. Leaves bipinnate
4. Stipular spines 2, pinnae 2-3 pairs A. modesta
4. Stipular spines 2, pinnae about 20 pairs, leaflets numerous A. catechu
4. Stipular spines 3, pinnae 3-5 pairs, leaflets 8-14 pairs A. senegal

A. farnesiana (Linn.) Willd. Sp. Pl. 4 : 1083, 1806 ; FBI. 2 : 292 ; FUGP. 1 : 313, Parker, For. Fl. 189.

Mimosa farnesiana Linn. Sp. Pl. 521, 1753

A shrub or small stunted tree. Stems grey. Spines straight, often paired, 0.5-1.4 cm. long. Pinnae 2-7 pairs. Leaflets small. Flowers golden-yellow, very fragrant, in axillary, fascicled heads. Pods 3.6-7.5, 1.2 cm., thick, cylindrical, hooked at the tip, pulpy inside.

Cultivated for hedges around gardens and fields.

Local name : Vilaiti babul
Flowers : Jan.-April. Fruits : April-May
J. K. Maheshwari 1031. Azadpur. 1329, 1342. Kingsway Camp.

A. arabica Willd. Sp. Pl. 4 : 1085, 1806 ; FBI. 2 : 293 ; FUGP. 1 : 314 ; Parker, For. Fl. 189.

A small or medium-sized tree, branching high above the ground. Bark dull black. Branches reddish-brown. Spines white, straight, 3-7 cm. long. Pinnae 2-6 pairs. Leaflets 10-20 pairs, 6-11 mm. Flowers yellow, fragrant, in axillary fascicled heads. Pods 8-15, 1.2 cm., flat, moniliform, with deep sutures between the seeds.

Commonly planted throughout the district along canal banks and in the fields. Leaves and young pods are used as fodder. The birds, especially crows, eat away the seeds from the pods which fall on the ground. These are picked up and given as fodder to goats and other animals. The twigs are chewed and used as tooth-brushes.

[illegible] Kikar
[illegible] Road

A. jacquemontii [illegible] 499, 84 [illegible]

[illegible] Leaflets [illegible] Flowers [illegible] pods 5-8 [illegible] long, flat [illegible] straight.

Planted as a hedge around gardens in Azadpur and neighbouring areas.

Local name : Kikar
Flowers : Cold season

A. leucophloea (Roxb.) Willd. Sp. Pl. 4 : 1083 ; 1806 ; F.B.I. 2 : 294 ; [illegible] 315 ; Parker, For. Fl. 191.

Mimosa leucophloea Roxb. Pl. Cor. 2 : 27, t. 150. 1800.

A small or medium-sized deciduous tree. Bark white-grey. Spines short, straight. Pinnae 5-12 pairs. Leaflets 10-30 pairs, linear, crowded, about 5 × 1 mm. Flower heads small, pale yellow, sweet-scented, in large terminal, leafless, densely tomentose panicles. Pods 10-15 × 0.6-[illegible], narrowly ligulate, with persistent, pale brown tomentum.

A characteristic tree of the hilly tracts of Delhi. Common on the Ridge. The leaves are eaten as fodder by goats. The flowers give a sweet scent at dusk. Fungus galls of *Haplophragmium* and insect galls occur on the tree. The pods are said to be poisonous and cattle may die after eating them.

Local name : Ronj ; Jand
Flowers : Sept.-Oct. Fruits : Nov.-Feb.
J. K. Maheshwari 461, Ridge

A. auriculiformis A. Cunn. in Hook. Lond. Jour. Bot. 1 : 377, 1842.

A medium-sized tree. Phyllodia curved, coriaceous, parallel-nerved, tapering at the ends. Flowers yellow, in cylindrical, lax spikes. Pods moniliform, brown, coiled at maturity, dehiscent.

Cultivated in lawns and as avenues in the side-lanes of New Delhi for its graceful pendent phyllodes and beautiful flowers.

Flowers : Oct. Fruits : Aug.; Nov. (next year)
J. K. Maheshwari 526, Lodi Gardens ; 708, Talkatora Gardens

A. modesta Wall. Pl. As. Rar. 2 : 27, t. 130, 1831 ; F.B.I. 2 : 296 ; Fl. G.P. 1 : 317 ; Parker, For. Fl. 193.

A small or medium sized tree, branching from base. Bark dull black. Leaflets 3-5 pairs, 8-10 × 5-7 mm., obliquely oblong or obovate. Young foliage reddish. Flowers white, in cylindrical drooping spikes. Pods 4-11 × 1-1.5 cm., oblong, flat, entire or subtorulose.

[illegible] The sap from the [illegible] [illegible] prevent diseases of teeth

Local name [illegible]
[illegible] New Delhi Ridge
J. K. Maheshwari [illegible]

A. catechu Willd. Sp. Pl. 4 : 1077, 1806. FBI 2 : 295. [illegible]

[illegible] black [illegible] Spines paired, hooked. [illegible] Pinnae [illegible] Leaflets numerous, 5-[illegible] mm. Flowers white, fragrant, fading towards pale [illegible] Pods [illegible] spikes. Flowers [illegible] 6-2.5 cm. long, stalked, torulose, dehiscent, dark brown.

Found in the hilly tracts of Delhi, especially on the Ridge. Occurs less commonly on the Ridge as compared to other species of Acacia. Differs from the closely allied *A. chundra* (Roxb.) Willd., by its pubescent leaf rachis, calyx and corolla.

Flowers and Fruits July-Aug.
J. K. Maheshwari 181, New Delhi Ridge.

A. nilotica Willd. Sp. Pl. 4 : 1077, 1806. FBI 2 : 295. FUGP 1 : 3 7

A small tree branching from near the base. Trunk greyish yellow. Spines usually in threes, hooked or straight. Pinnae 3-5 pairs. Leaflets 8-14 pairs. Flowers white, fragrant, fading to dull yellow, in cylindrical, 5-12 cm. long spikes. Pods 5-9 × 2-2.5 cm., dehiscent, flat, straight, grey. Seeds brown, orbicular.

Common throughout the Ridge.

Flowers July-Sept. Fruits Post-monsoon and cold seasons.
J. K. Maheshwari 1122, Ridge.

The following species were collected by W. R. Mustoe, Superintendent Govt. Horticultural Department, Delhi, and sent to Forest Research Institute Herbarium, Dehra Dun. I have not come across them during my collection trips.

† **A. polyacantha** Willd. Sp. Pl. 4 : 1079, 1806.

A. suma Buch.-Ham. ex Voigt, Hort. Suburb. Calc. 260. 1845 ; FBI 2 : 294.

Locality : Delhi Ridge, cultivated
Collector : Mustoe, 1924

A. ferruginea DC. Prodr. 2 : 458, 1825 ; FBI 2 : 295.

Locality : Ridge, cultivated
Collector : Parker, Feb. 1923 ; Mustoe, 1924

[illegible]

A. confusa Merr. [illegible]

A. horrida [illegible]

Albizia Durazz. [illegible]

Pods [illegible] flowers stalked

Pods [illegible] brown, flowers sessile

Midrib of leaflets nearer the upper edge — *A. lebbeck*

Midrib of leaflets near the lower edge — *A. odoratissima*

Pods reddish-brown; flowers shortly pedicelled — *A. procera*

midrib of leaflets central — *A. amara*

A. lebbeck (Linn.) Benth. in Hook. Lond. Jour. Bot. 3: 87, 1844; FBI. 2: 298; FUGP. 1: 320; Parker, For. Fl. 186.

Mimosa lebbeck Linn. Sp. Pl. 516, 1753.

A medium-sized or large deciduous tree. Trunk grey. Leaves pari-pinnate with a large gland at base. Pinnae 2-3 pairs. Leaflets 5-10 pairs, 3.5 × 1.5-2 cm. Flowers pale yellow, scented, in heads. Pods 10-30 × 3-5 cm., straw-coloured, with pale brown patches, flat, dry.

Commonly planted in avenues on the Bhagwandas and Shahdara Roads. In reduced on the Ridge where it flowers and fruits.

Local name : Siras

Flowers : April-July. Fruits : Sept.

J. K. Maheshwari 233

A. odoratissima (Linn. f.) Benth. in Hook. Lond. Jour. Bot. 3: 88, 1844; FBI. 2: 299; FUGP. 1: 321; Parker, For. Fl. 185.

Mimosa odoratissima Linn. f. Suppl. 437, 1781.

A tall, erect tree. Bark dark grey. Leaves bipinnate. Pinnae 3-4 pairs. Leaflets 8-20, midrib near the upper edge. Flowers yellowish-white. Pods 16-20 × 2.5 cm., thin, flexible, reddish-brown.

Cultivated along the roadsides.

Local name : Siris

Fruits : Nov.

A. procera (Roxb.) Benth. in Hook. Lond. Jour. Bot. 3: 89, 1844; FBI. 2: 299; FUGP. 1: 321; Parker, For. Fl. 187.

Mimosa procera Roxb. Pl. Cor. 2: 12, t. 121, 1799.

A tall tree. Bark yellowish- or greenish-white. Leaves bipinnate, with a large gland at the base. Pinnae 2-6 pairs. Flowers yellowish-white, in small heads. Pods 10-20 × 1.8 cm., reddish-brown, shining

[illegible]

J. K. Maheshwari [illegible] Delhi

[illegible] [illegible] Flowers yellow [illegible]

Cultivated in gardens and [illegible] Seldom [illegible] planted on the Ridge

Flowers July-Sept. Fruits Nov.-Dec.

J. K. Maheshwari 177 [illegible] Delhi Ridge

Pithecellobium Mart. [illegible]

P. dulce (Roxb.) Benth. Hook. Lond. Jour. Bot. 3 : 199, 1844 ; B. & H. F. Fl. BrP. 1 : 372 ; Benthall, Trees Calc. 225

Mimosa dulcis Roxb. Pl. Cor. 1 : 67, t. 99 ; 1798

Inga dulcis Willd. Sp. Pl. 4 : 1005, 1806

A large, thorny tree. Bark grey-white or slate-coloured. Leaves with pinnae. Pinnae 2. Leaflets 2, obovate or elliptic-oblong. Flowers white, in globose axillary heads. Pods spirally twisted, reddish-brown.

Cultivated in gardens. Makes excellent hedges around bungalows, gardens, fields and ancient monuments of Delhi and New Delhi. The seeds are eaten raw or in curries.

Local name : Vilayti imli ; Jangal zalebi

Flowers : April-July. Fruits : June-Aug.

J. K. Maheshwari 170, Cavalry Lines

40. Rosaceae

Ovary inferior ; fruit a pome
  Inflorescence a terminal panicle ; leaves feathery — *Eriobotrya*
  Inflorescence a terminal cyme or corymb ; leaves thin — *Pyrus*
Ovary superior ; fruit not a pome
  Leaves simple
    Small shrubs ; carpels 5 or more — *Spiraea*
    Shrubs or trees ; carpel 1 — *Prunus*
  Leaves compound
    Erect or climbing shrubs ; fruit an aggregate of achenes enclosed in a fleshy calyx — *Rosa*
    Herbs ; achenes on a dry receptacle — *Potentilla*

[illegible] Linn.

C. japonica [illegible]

[illegible] Branches [illegible] Flowers [illegible] in the Sub-inland and [illegible] which are sold in the market during the months [illegible] Flowers appear in September and they generally [illegible] producing any fruit.

Local name: Lokat, Lukat
Flowers : Nov.-Dec. Fruits : March-April
J. K. Maheshwari 400, Gardens on way to Sarai Rohilla

Pyrus Linn.

P. pyrifolia Nakai var. **culta** Nakai in Bot. Mag. Tokyo 40 : 564 1926
P. sinensis Hort. (non Linn.).

An erect, medium-sized or large tree. Bark grey, fissured. Leaves broad ovate to elliptic or oblong-orbicular, 6-10 × 5-8 cm., acuminate, long-petioled. Flowers white or tinged with pink. Pomes 7-9 × 5-8 cm., variable, mostly pyriform or subglobose, yellow. Seeds lenticular.

Commonly cultivated in the Sarai Rohilla, Kingsway Camp and Sabzi mandi Gardens for its edible fruits.

Local name: Nashpati
Flowers : April-May. Fruits : July-Sept.
J. K. Maheshwari 194, Prem Bari (Azadpur)

Spiraea Linn.

S. cantoniensis Lour. Fl. Cochinch. 322, 1790 ; Bailey, Man. Cult. Pl. 497.
S. corymbosa Roxb. Hort. Beng. 38. 1814, nom. nud. & Fl. Ind. 2 : 512, 1832.

A small, handsome, evergreen shrub. Branches reddish-brown. Leaves oblong-lanceolate, serrate, bluish-green. Flowers white, in dense umbelliform corymbs, with the leaves.

Native of China and Japan. Grown as an ornamental plant in the hedges and shrubberies of gardens.

Flowers : March-April
J. K. Maheshwari 650, Rashtrapati Bhavan Campus

Prunus Linn.

Flowers pink, drupes pubescent — *P. persica*

Flowers white or pink, drupes glabrous — *P. domestica* [illegible]

P. persica (Linn.) Stokes, Bot. Mat. Med. 3: 80, 1812; FBI. 2: 314; Parker, For. Fl. 194; Duthie, Fl. Gang. 1: 324; Parker, For. Fl. 472, 1956.

Amygdalus persica Linn. Sp. Pl. 472, 1753.

A large shrub or small tree. Leaves oblong-lanceolate, finely serrate with nectar and marginal glands. Flowers pink, showy, appearing before the leaves. Fruits about 4-5 cm. variable in size and shape, pubescent, yellow or red-spotted, stones have deeply pitted [illegible]. Commonly grown in the fruit orchards near Kingsway Camp, Sabzimandi, Sarai Rohilla and on Karnal Road. For its sweet edible fruits. Also planted in gardens, lawns and in hedges around bungalows for its profuse beautiful blooms.

Local name : Aru ; English name : Peach

Flowers : Jan.-March. Fruits : June

J. K. Maheshwari 121, Azadpur, 1358

P. domestica Linn. subsp. **insitita** (Linn.) Schneid. Ill. Handb. Laubholzk. 1: 616, 906.

P. insitita Linn. Cent. Pl. 1: 12, 1755.

P. communis Huds. var. *insitita* Hook. f. in FBI. 2: 315, 1878; FUGP 1: 324.

A large woody shrub or small tree. Leaves ovate to oblong-lanceolate, 6-10 × 1.7-2.5 cm., membranous, sharply serrate. Flowers small white, appearing before or with the leaves. Drupes smooth, globose or ovoid, yellow, often with a reddish tinge or dark red.

Commonly cultivated in the fruit orchards of Sarai Rohilla, Sabzimandi, Azadpur and Kingsway Camp for its sweet, juicy fruits.

Local name : Alucha ; Alu-bukhara ; English name : Plum

Flowers : Oct.-Nov. Fruits : May-June

J. K. Maheshwari 542, on way to Sarai Rohilla, 662, Azadpur

Rosa Linn.

Several types of roses of erect, scrambling or climbing habit are grown in public and private gardens and in the orchards below the fruit trees. The common colours of the flowers are white, pink, rosy, red or purplish. Generally the flowers fall off but the roses growing in the fruit orchards of Delhi do sometimes produce globose fruits. The species cultivated in the area are :

R. moschata Thunb. Fl. Jap. 214, 1784; Bailey, Man. Cult. Pl. 533.

R. banksiae R. Br. in Ait. f. Hort. Kew. 3: 256, 1811.

A climbing rose. Flowers white, small, in umbelliform clusters

Flowers [illegible]

J. K. Maheshwari [illegible] Mughal Gardens

R. indica Linn. Sp. Pl. 491 (1753)

R. damascena M. B. Cat. Dec. [illegible] 1768 [illegible]

Potentilla Linn.

P. supina Linn. Sp. Pl. 493 (1753) [illegible] 1183 2 339 [illegible]

A prostrate or ascending branched annual herb. Leaves [illegible] Flowers [illegible] Achenes [illegible] minute.

Common during the winter months in Khadar area, especially along the banks of Jamuna and temporary ponds, on moist sandy or sandy-silty soil, forming a green carpet of its own or associated with other winter ephemerals.

Local name : Dodi

Flowers and Fruits : Jan.-April, rarely up to Sept.

J. K. Maheshwari 597, Jamuna Banks

41. Combretaceae

Erect trees or shrubs ; petals absent	
Flowers in spikes	
Flowers in globose heads	*Terminalia*
Climbing or sarmentose shrubs . petals 5	*Anogeissus*
	Quisqualis

Terminalia Linn. nom. cons.

Fruits fleshy, tomentose, ovoid, without wings	*T. bellirica*
Fruits coriaceous, 5 to 7 winged	
Leaves subopposite . wings of fruits narrow	*T. arjuna*
Leaves subopposite or alternate above . wings of fruits broad . . .	*T. tomentosa*

T. bellirica (Gaertn.) Roxb. Pl. Cor. 2 54, t. 198. 1805 ; FBI 2 445 ; FLGP 1 335

Myrobalanus bellirica Gaertn. Fruct. 2 90, t. 97, 1790.

A medium-sized or large deciduous tree. Bark dark grey. Trunk tall. Leaves 10-20 × 8-11 cm. broadly elliptic, coriaceous, long-petiolate. Flowers greenish-yellow, foetid-smelling, in slender, interrupted spikes. Drupes ovoid or ellipsoid, grey-velvety.

This tree forms a beautiful avenue along Barakhamba and Sikandra Roads in New Delhi. Also planted in public gardens and parks. The fruits are medicinal and relished by animals.

[illegible]

J. K. Maheshwari 662, Sikandra R[illegible]

T. arjuna R. [illegible] Wt. & A. [illegible] 1834

[illegible] 1 [illegible] 136 Prod

Pentaptera [illegible] Roxb. Hort. Beng. [illegible] 1814 nom. nud. & Fl. Ind. 2 440.

P. glabra Roxb. Hort. Beng. 34 1814 nom. nud. & Fl. Ind. 2 440.

[illegible] cort. descript.

terminalia glabra Wt. & Arn. Prodr. 314. 1834 ; FUGP 1 336

A medium size or large, handsome, glabrous tree. Bark white or [illegible] Leaves opposite or subopposite, oblong or elliptic, with pinkish [illegible] Flowers pale yellow, in pendulous, terminal and 1-2 pairs at base. Fruits ovoid or obovoid-oblong, 4 to 5-winged or more, axillary spikes.

Planted along several roads of Delhi and New Delhi. Also grown in gardens and lawns around bungalows.

Local name : Arjun , Termenalia Patju Jumela
Flowers : April-July. Fruits - July-Aug
J. K. Maheshwari 262, Najafgarh Road

T. tomentosa* Wt. & Arn. Prodr. 314, 1834, FBI. 2 447 FUGP 1 - 337

A medium-sized or large, deciduous tree. Leaves oblong to obovate, entire, emarginate. Flowers dull yellow in panicled, lax spikes. Fruits 5-winged, wings transversely striated, orcupiate.

Cultivated in lawns, gardens and along roadsides.

Flowers . June-Aug.
J. K. Maheshwari, passim in gardens

Anogeissus Wall.

Calyx tube shorter than the fruit	branches pendulous	*A. pendula*
Calyx tube longer than the fruit	branches not pendulous	*A. acuminata*

*The whole names for this plant are the following

Terminalia arjuna Wt. & Arn. Prodr. 3 4. 1834 , Dalz. & Gibs. Bomb. Fl. 91, 1861
Terminalia bertrei Wt. & Arn. Prodr. 314, 1834.
Terminalia glabra Wt. & Arn. Prodr. 314. 1834 Dalz. & Gibs. Bomb. Fl. 9 1861
Pentaptera arjuna Roxb. Hort. Beng. 34. 1814, nom. nud. DC. Prodr. 3 14, 828
Pentaptera glabra Roxb. Hort. Beng. 34. 1814, nom. nud. & Fl. Ind. 2 440 1832

Roxb.'s specific names *arjuna* and *glabra* of 1814 are nomina nuda and therefore invalid for nomenclature. The oldest next name and the first valid one for the plant is DC.'s *Pentaptera arjuna* of 1828 , the specific epithet *arjuna* is, therefore, the only valid one for the plant. It is wrong as Duthie (in FUGP 1 336 1903) has done to say *Terminalia glabra* Further *Terminalia arjuna* is attributed to Bedd. Fl. Sylv. t. 28 this is of 1869 and therefore later than Dalz. & Gibs. Bombay Flora, 1861 , and Wt. & Arn.'s Prodr., 1834.

[illegible] Edgew. in TASB [illegible] 45 [illegible]

A shrub or small tree [illegible] Leaves [illegible] Flowers [illegible] in fruits [illegible]

According to Champion [illegible] India Delhi, Etawah and Ajmer have lost [illegible] of forest such as the *Anogeissus pendula* [illegible] explorations were see[illegible] protected [illegible] of New Delhi Ridge and Faridabad-Gurgaon boulders.

Occurs commonly on the New Delhi Ridge as well as on the [illegible] region of Gurukul Indraprastha near Faridabad. Rare on the Old Delhi Ridge. It is subject to rather heavy exploitation. The cattle greedily eat the foliage so that in the hilly tracts near Faridabad the plant is reduced to a prostrate stunted shrub spreading on rocks and giving an entirely different appearance from those growing in protected areas. Used in plasters for inflammation troubles.

Local name : Dhoy , Siras
Flowers and Fruits : Aug. Sept.
J. K. Maheshwari 822 ; 1183, New Delhi Ridge 1234, Gurukul Indraprastha near Faridabad (Punjab)

A. acuminata (Roxb. ex DC.) Wall. Cat. 4014. 1831 nom. nud. Brand. s. For. Fl. 228, 1874 ; Kurz, For. Fl. Burma 1 : 466, 1877 ; FBI. 2 : 450.
Conocarpus acuminatus Roxb. Hort. Beng. 34. 1814. nom. nud. DC. Prodr. 3 : 17, 1828 ; Roxb. Fl. Ind. 2 : 443 ; Wt. & Arn. Prodr. 316.

A small tree. Bark dark grey. Leaves ovate or oblong-lanceolate, acute or subacuminate. Flower heads solitary, long-peduncled. Fruits tomentose ; wings broader than long, irregularly dentate.

I have not found it wild. A few trees are planted in Lodi Gardens.

Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 1456

Quisqualis Linn.

Q. indica Linn. Sp. Pl. 556, 1762 ; Bailey Man. Cult. Pl. 724, Bor & Raiz. 178, Pl. 66.

A large, climbing or scandent deciduous shrub. Leaves elliptic or ovate-oblong, 6-13 × 3-6 cm. Flowers deep pink to red, fragrant, showy, in terminal, drooping spikes. Corolla tube 7 × 0.2 cm.

Native of Java and Malay Peninsula. Commonly grown in gardens for ornamental purposes.

Flowers April-Oct
J. K. Maheshwari 110, Qudsia Road

42 Myrtaceae

Inflorescence resembling a bottle-brush flowers in spikes or heads *Callistemon*
Shrub or tree *Melaleuca*
Stamens united into bundles opposite the petals
Inflorescence not as above flowers solitary, clustered or in umbels or heads
Calyx lobes and petals united to form an operculum or cap fruit a dehiscent capsule *Eucalyptus*
Calyx lobes and petals distinct fruit a berry
Flowers large, white, on 1 or few-flowered peduncles ovary 4 to 5-celled *Psidium*
Flowers small, greenish-white, in terminal, axillary or lateral cymes, ovary 2-celled *Syzygium*

Callistemon R. Br

C. lanceolatus DC Prodr. 3 223, 1828; Parker, For. Fl. 245, Benthall, Trees Calc 249

A large, evergreen shrub or tree with fissured bark and drooping branches. Leaves alternate, linear-lanceolate, 4-7 × 0.4-0.6 cm. Flowers crimson, in terminal spikes. Stamens numerous, long-exserted. Capsules with a truncate apex.

Cultivated in gardens, hedges and lawns for ornamental purposes. The inflorescence resembles a bottle-brush and hence its common name.

English name : Bottle-brush
Flowers : Oct. Feb.
J. K. Maheshwari 579, Nicholson Gardens

Melaleuca Linn. nom. cons

M. leucadendra Linn. Mant. 105, 1767; Parker, For. Fl. 245, Benthall, Trees Calc 247

A tree with pendulous branches. Leaves 6-9 × 1-1.5 cm., flat, elliptic or oblong, parallel-veined. Flowers yellowish-white, in terminal spikes. Capsules subglobose.

Cultivated in gardens for ornament.

English name : Cajeput-tree
Flowers and Fruits : May
J. K. Maheshwari 1219, Roshanara Gardens

Some species of *Eucalyptus* have been successfully naturalized in gardens [illegible] and [illegible] near some bazars of Delhi. It also grows as a [illegible] plantation in the [illegible] W. R. Mayne, formerly Superintendent of Government Horticultural Department, New Delhi, was probably responsible for establishing small plantations of *Eucalyptus* near Bela Road [illegible] and Red Fort and also near Lake Water Reservoir. The Bela Plantation can be seen even today and the wood is used as timber. The leaves are used as flavouring agents and kept in books to repel insects. The following species are cultivated in the area.

E. globulus Labill. Voy. 1. 153, t. 13, 1800; Parker, For. Fl. 250; Bailey, Man. Cult. Pl. 727.

A tall tree. Bark peeling in long strips or sheets. Trunk smooth greyish or bluish-white. Leaves lanceolate. Flowers large 1-3 together in axils. Operculum depressed-hemispheric, abruptly pointed.

E. tereticornis Sm. Bot. N. Holl. 41, 1793; Parker, For. Fl. 252; Bailey op. cit. 728.

A tall tree. Bark grey, peeling in thin layers. Flowers 4-8 together in an umbel. Operculum conical, acuminate, 2-4 times longer than calyx tube.

E. citriodora Hook. in Mitch. Jour. Trop. Aust. 235, 1848; Benthall, Trees Calc. 246.

A tall, handsome tree. Bark shining, whitish or reddish-grey. Flowers in short panicles. Operculum double, inner transparent, outer hemispheric, pointed.

E. paniculata Sm. in TLS. 3. 287, 1797; Parker, For. Fl. 248.

A tall or medium-sized tree. Bark hard, persistent, deeply fissured grey-brown. Leaves lanceolate, acuminate. Flowers in panicles. Operculum variable. Fruits truncate-ovate.

E. camaldulensis Dehnh. Cat. Pl. Hort. Camald. 30, 1832; Bailey, Man. Cult. Pl. 728.

E. rostrata Schl. in Linnaea 20. 655, 1847; Parker, For. Fl. 251.

A tall tree. Bark ashy-grey or white. Flowers in lateral or supra-axillary umbels, solitary or in few-flowered peduncles. Operculum hemispheric, sharply beaked.

E. rudis Endl. in Enum. Pl. Hueg. 49, 1837; Parker, For. Fl. 249; Bailey, loc. cit.

A tall tree. Bark rough, grey-persistent. Leaves ovate to narrow lanceolate. Flowers 4-8 together, in a peduncled umbel. Operculum conical, not beaked, about as long as calyx tube. Fruits broadly turbinate.

Flowers: July-Sept.

J. K. Maheshwari 281

Psidium Linn.

Young branchlets 4-angled ; veins of leaves conspicuously impressed above and raised below — *P. guajava*

Young branchlets terete ; veins of leaves not prominent — *P. cattleianum*

P. guajava Linn. Sp. Pl. 470, 1753 ; Parker, For. Fl. 245, Bentinall, Trees Calc. 244.

A green, woody, erect to medium-sized tree. Bark scaly, brownish. Wood reddish-brown. Leaves coriaceous, oblong-elliptic, the veins prominently impressed above. Flowers white, about 2.5 cm. in diam. Fruit globose, ovoid or pyriform, yellow with white or deep pink pulp.

Introduced. Grown in all the fruit orchards of Delhi for its edible fruit which is sold extensively in the market.

Local name : Amrood
Flowers and Fruits : July-Sept
J. K. Maheshwari 227 Karnal Road Gardens ; 417 Uzirpur Gardens

P. cattleianum Sabine in Trans. Hort. Soc. Lond. 4 : 317 t. 11, 1822 ; Bailey, op. cit. 729.

A bushy shrub with grey-brown bark. Leaves obovate to elliptic, thick, leathery, the veins not prominently impressed. Flowers white. Fruit obovate to globose, much smaller than the above, purplish-red.

Introduced. There are some plants in the shrubbery of Government Sunder Nursery that produce flowers and fruits.

Local name : Japani amrood
Flowers : July
J. K. Maheshwari 1124, Sunder Nursery

Syzygium Gaertn. nom. cons.

S. cumini (Linn.) Skeels in U. S. Dept. Agric. Bur. Pl. Ind. Bull. No. 248 : 29, 1912 ; Bentinall, Trees Calc. 242, Santapau in RBSI 16(1) : 105, 1953.

Myrtus cumini Linn. Sp. Pl. 471, 1753.

Eugenia jambolana Lamk. Encycl. 3 : 198, 1789 ; FBI. 2 : 499 ; FI. GP. 1 : 342.

Syzygium jambolanum DC. Prodr. 3 : 259, 1828 ; Gamble, Fl. Pres. Mad. 481.

A medium-sized or large tree. Bark smooth, grey. Leaves 7.5-15 × 5 cm. Panicles lateral, from the scars of fallen leaves. Flowers greenish-white. Berries ovoid or oblong to ovoid-oblong, dark purple, juicy, 1-seeded.

Commonly cultivated in the Safdarjang, Sarai Rohilla Railway Camp and Karnal Road Gardens for its fruits which are eaten raw and also in the market. Has been planted as a roadside tree in New Delhi.

Local name : Jamun

Flowers : April-June. Fruits : June-July

J. K. Maheshwari 90, Roshanara Garden.

43. Lythraceae

Herbs
Shrubs or trees — *Ammannia*
Flowers irregular ; calyx tube slightly curved — *Woodfordia*
Flowers regular ; calyx tube straight
Flowers tetramerous ; stamens 8 — *Lawsonia*
Flowers hexamerous ; stamens indefinite — *Lagerstroemia*

Ammannia Linn.

Leaves narrowed to the base ; flowers clustered on the leaf axils ; petals absent — *A. baccifera*
Leaves subauriculate at base ; flowers in compound, stalked cymes ; petals bright pink, caducous — *A. senegalensis*

A. baccifera Linn. Sp. Pl. 120, 1753 ; FBI 2 : 569 ; FUGP 1 : 350

An erect, glabrous herb in marshes. Stems and branches angular purplish. Leaves opposite, narrowed to the base. Flowers in condensed axillary racemes or clusters. Capsules red when ripe, glabrous.

Common in moist, sandy places and along canal banks, often associated with marshy sedges.

Flowers and Fruits : June-Oct., also in Jan.

J. K. Maheshwari 1068, Karnal Road

A. senegalensis Lamk. Tabl. Encycl. 1 : 312, n. 155, t. 77 f. 2, 1791 ; FBI 2 : 570 ; FUGP. 1 : 350

An erect, glabrous, branched herb, 20-45 cm. tall. Leaves 2.5-5.5 × 0.5-1 cm., oblong. Flowers bright pink in whorled, compound cymes. Petals caducous. Capsules small, globose.

A moisture-loving plant, found along canal banks on wet, marshy soil.

Flowers : Sept.-Oct.

J. K. Maheshwari 437, Najafgarh ; 494

Woodfordia Salisb.

W. fruticosa (Linn.) Kurz in JASB. 40 : 56, 1871 ; Santapau in RBSI 16(1) : 114, 1953.

Lythrum fruticosum Linn. Sp. Pl. 641. 1762.
Munchausia flor-bunda Salisb. Parad. Lond. t. 43. 1806. FBI. 2. 57.
Lagerstroemia flor-bunda (Salisb.) Pers. Syn. 1. 354.

A large shrub, 3-6 m. long, spreading branches. Bark [illegible] peeling off in flakes. Leaves [illegible] 2 cm., ovate-lanceolate. Flowers [illegible] in axillary clusters, on slender peduncles. Capsules 9-14 mm. [illegible] the persistent calyx tube.

Cultivated in gardens and as hedges for ornamental purposes.

Flowers and Fruits: Feb.-April.

J. K. Maheshwari 638, Rashtrapati Bhavan Campus.

Lawsonia Linn.

L. inermis Linn. Sp. Pl. 349. 1753; Santapau loc. cit.
L. alba Lamk. Encyc. 3. 106. 1789; FBI. 2. 573; FLGP. 352.

A shrub or small tree with thin, greyish-brown bark. Leaves 1.5-4 × 1.5 cm., nearly sessile, elliptic, coriaceous. Flowers white, [illegible] yellow after picking, pungent scented, in large corymbosely branched terminal panicles. Capsules about 6-8 mm., globose. Seeds angular, brown.

Planted as a hedge. The leaves are used to dye the nails, skin and beard. A large plantation is seen in village Vallabgarh where it is cut twice a year for its leaves.

Local name: Mehndi.
Flowers and Fruits: June-Oct.
J. K. Maheshwari 208, Talkatora Gardens, 1304.

Lagerstroemia Linn.

Shrubs with white, pink or purple flowers — *L. indica*
Trees with white-mauve or mauve flowers:
  Flowers mauve-coloured — *L. speciosa*
  Flowers mauve mottled with white — *L. thorelii*

L. indica Linn. Syst. 1076. 1759; Blatt. & Mill. Beaut. Ind. Tr. 105.

A deciduous, glabrous shrub, 1.8-3.6 m. tall. Bark smooth, brown. Leaves elliptic or oblong, 3-6 × 2-3 cm. Flowers pink, white or purple. Capsules woody, 1.3 × 1.2 cm.

Native of China. An ornamental shrub grown in the hedges of gardens.

Flowers: March-July.
J. K. Maheshwari 225, Talkatora Gardens; 522.

L. speciosa (Linn.) Pers. Syn. 2: 72. 1806; Koehne in Pfreich. 17. 261. 1963; Benthal. Trees Calc. 260; Blatt. & Mill. op. cit. 100, t. 21.
Munchausia speciosa Linn. in Muench. Hausv. 1. 357. t. 2. 1770.
Lagerstroemia flos-reginae Retz. Obs. 5: 25. 1788.

[illegible]

[illegible]

[illegible]

J. K. Maheshwari [illegible]

L. thorelii [illegible]

A small bushy tree. Leaves large [illegible] capsules globose, adnate to the [illegible]

A few trees have been planted in the [illegible]

Fruits June

J. K. Maheshwari 53

44. Punicaceae

Punica Linn.

P. granatum Linn. Sp. Pl. 472, 1753 ; FBI. 2 : 581 ; FUGP 1 : 354 ; Parker For. Fl. 253.

A shrub or small tree. Bark dark grey. Leaves oblong, obovate or oblanceolate. Flowers bright red or vermilion-red, terminal, solitary or in 3-flowered cymes. Fruits reddish-brown, globose. Seeds angled, arilled with an acidic or sweet juice.

Cultivated in the fruit orchards for its edible fruits. Also planted in the hedges of gardens.

Local name : Anar ; English name : Pomegranate.
Flowers : April-July. Fruits : July-Sept.
J. K. Maheshwari. 207, Nicholson Gardens ; 688, Mughal Gardens 1011.

45. Onagraceae

Jussiaea Linn.

Flowers white . . . . . *J. repens*
Flowers yellow . . . . . *J. perennis*

J. repens Linn. Sp. Pl. 388, 1753 ; FBI. 2 : 587 ; FUGP 1 : 355.

A floating aquatic or creeping on mud. Stems rooting at the nodes and with number of spongy vesicles at the nodes. Leaves obovate to oblanceolate. Flowers white, solitary, aerial. Capsules cylindric

Common in and on the borders of ponds and canals. The leaves are eaten away by an insect.

Local name : Pani ki ghas
Flowers : Sept.-Oct.
J. K. Maheshwari 478, Najafgarh Canal

J. perennis (Linn.) Brenan, in Kew Bull. 163, 1953.
Ludwigia perennis Linn. Sp. Pl. 119, 1753.
L. parviflora Roxb. Fl. Ind. 1 : 440, 1820 ; FBI. 2 : 588.

An erect glabrous herb, 10 cm. or more tall. Stems pale red. Leaves ovate to linear-lanceolate, tapering at ends. Flowers yellow, solitary, axillary, numerous. Stamens 4. Capsules oblong (10 - 2 mm.), many seeded.

Occurs rarely. Found in moist spots along the banks of Najafgarh Drain. It often escapes notice due to its short size and being hidden in the grass.

Flowers : Aug.
J. K. Maheshwari 1248, Najafgarh Canal Banks.

46. Trapaceae

Trapa Linn.

T. bispinosa Roxb. Hort. Beng. 11, 1814, nom. nud. & Fl. Ind. 1 : 428, 1832 ; FBI. 2 : 590, in part ; FUGP. 1 : 358.

An aquatic herb, ascending in the water. Floating leaves arranged in a rosette, rhomboidal ; submerged ones dissected ; petioles spongy near top. Flowers white, solitary. Nuts angled, shortly beaked at the apex and with a sharp, spiny horn on either side.

Cultivated in the Najafgarh, Shahdara and Hindan Canals, lakes and ponds for its edible fruit which is eaten raw or cooked. The four common kinds grown in the area are (1) Red Fruited, (2) Green Fruited, (3) Mathhidar, and (4) Dogra.

Local name : Singhara
Flowers : Sept. Fruits : Sept.-Dec.
J. K. Maheshwari 557

47. Caricaceae

Carica Linn.

C. papaya Linn. Sp. Pl. 1036, 1753 ; FBI. 2 : 599 ; FUGP. 1 : 383 ; Benthall, Trees Calc. 267.

[illegible]

48. Cucurbitaceae

Several species of this family are grown in the [illegible] much used as vegetable, either raw or cooked during [illegible] months. They are commonly cultivated in sandy soil along [illegible] of Jamuna River, its tributaries and also in [illegible] Hindan Canals.

Anther cells straight
- Style with an annular disc at the base
- Style without a disc at the base [illegible] with a simple bract [illegible] *Mucuna*

Anther cells flexuose or conduplicate
- Corolla divided nearly to the base
  - Petals fimbriate . . . . . *Ctenolepis*
  - Petals entire :
    - Calyx tube of male flowers elongate, anthers included . . . . . *Trichosanthes*
    - Calyx tube of male flowers short ; anthers more or less exserted : . . . . . *Lagenaria*
      - Stamens inserted near the mouth of calyx tube
        - Staminate flowers in racemes ; ripe fruit dry *Luffa*
        - Staminate flowers solitary ; fruit fleshy *Benincasa*
      - Stamens inserted below the mouth of calyx tube
        - Staminate flowers solitary or racemed, tendrils simple *Momordica*
        - Staminate flowers clustered or solitary, tendrils simple *Cucumis*
        - Male and female flowers solitary, tendrils branched *Citrullus*

Corolla gamopetalous, bell-shaped
- Tendrils simple ; flowers white . . . . . *Coccinia*
- Tendrils branched ; flowers yellow *Cucurbita*

Melothria Linn.

[illegible]

Ctenolepis Hook. f.

C. garcinii (Linn.) CL in FBI 2 [illegible]

Bryonia garcinii Cogn. in DC. Mon. Phan. [illegible]

A [illegible] climber. [illegible] Flowers pale green. [illegible] Fruits globose, about 2 [illegible] ripe.

Common in the area climbing upon trees and [illegible]. The [illegible] milky sap of the fruit is irritating to the eyes. The plant is [illegible] medicinally.

Flowers and Fruits : Oct.-Feb.
J. K. Maheshwari 807

Trichosanthes Linn.

Male flowers solitary ; fruits oblong, red
Male flowers in racemes [illegible]
Male racemes ebracteate ; fruits ovoid, conical, pulp red [illegible]
Male racemes with minute bracts ; fruits ellipsoid [illegible]

T. dioica Roxb. Hort. Beng. 70 (1814 nomen nud.) & Fl. Ind. [illegible] FBI. 2 : 609. Duthie & Fuller, Field & Gard. Crops 3 [illegible] A climbing herb. Stems [illegible]. Leaves ovate-oblong [illegible]

[illegible]

[illegible] Rodgers [illegible]

[illegible] Egg [illegible] Rodgers

Flowers Rainy season Fruits [illegible]

J. K. Maheshwari 1437 Rodgers

T. anguina L. Sp. Pl. (1753) 1011 Fl. [illegible] 61 Duthie & Fuller [illegible]

A climbing or trailing herb. Leaves [illegible] Flowers [illegible] Fruits long, uniform, variable in shape [illegible] when [illegible] cultivated. Fruits from which [illegible]

Local name: Chichinda English name: Snake gourd

Flowers and Fruits: Rainy season

J. K. Maheshwari 1440

Lagenaria Ser.

L. vulgaris Ser. in Mém. Soc. Phys. Genève [illegible] 5 (1835) FBI 2: 6[illegible]

Duthie & Fuller, op. cit. 2: 49 [illegible]

Cucurbita lagenaria Linn. Sp. Pl. [illegible] 1: 1353

A softly pubescent, climbing or trailing herb. Leaves [illegible] 5-lobed or angled. Flowers large, white. Fruits [illegible] usually bottle- or dumbbell-shaped.

Cultivated as vegetable.

Local name: Lauki English name: Bottle gourd

Flowers and Fruits: Rainy season

J. K. Maheshwari 1441

Luffa Cav.

Stamens 3: fruits sharply 10-edged — *L. acutangula*

Stamens 5: fruits not 10-edged — *L. aegyptiaca*

T. acutangula [illegible] 1814 [illegible] & [illegible] Dutt. & Fuller [illegible] 61 [illegible] 1011 [illegible] 53

[illegible] Flowers pale yellow. Male [illegible] Fruits [illegible] [illegible]

[illegible]

[illegible]

[illegible]

J. K. Maheshwari 682

T. cylindrica (Linn.) Roem. Syn. Pepon. 63, 1846; Duthie & Fuller [illegible] 61 [illegible] 63

Momordica cylindrica Linn. Sp. Pl. 1009. 1753

Luffa aegyptiaca Mill. Gard. Dict. 1768; F.B.I. 2 : 614

Climbing or trailing, scabrous annual. Leaves orbicular-reniform [illegible] lobed or angled. Flowers yellow, male and female from the same axil. Male flowers in panicles. Fruits cylindrical or fusiform obscurely 10-ribbed. Seeds black.

Cultivated as vegetable and may be seen spreading over bushes or on roofs.

Local name : Ghia-torai
Flowers and Fruits : July-Sept.
J. K. Maheshwari 192, Wazirpur

Benincasa Savi

B. hispida (Thunb.) Cogn. in DC. Mon. Phan. 3 : 513, 188.
Cucurbita hispida Thunb. Fl. Jap. 322, 1784
Benincasa cerifera Savi in Bibl. Ital. 9 : 158, 1818 & Mem. Sopra Plant. Cucurb. : 6, 1818; F.B.I. 2 : 616; Dutt. & Fuller, op. cit. 2 : 43, t. 45.

A large climbing or trailing gourd. Leaves 5 to 7-lobed, hispid beneath. Flowers large yellow. Fruits fleshy, broad oblong or ovoid-cylindric with a waxy bloom, flesh white.

Cultivated for its fruit which is eaten as vegetable and also used in the preparation of 'Petha' by the local confectioners.

Local name : Petha, English name : White gourd
Flowers and Fruits : Rainy season

Momordica Linn.

Male and female flowers on same plant : fruits tubercled : *M. charantia*
Male and female flowers on different plants, fruits spinose : *M. dioica*

[illegible]

M. charantia [illegible]

[illegible]

M. dioica [illegible]

[illegible]

Not [illegible] climbers in a wild condition [illegible] of Mehrauli, Farrukhabad, twining upon *Capparis sepiaria* Linn. [illegible] and other plants, or spreading upon grass. The fruits are used as vegetable.

Local name : Jangli karela ; Murela : Ban karela
Flowers and Fruits : July-Oct
J. K. Maheshwari 1149, Mehrauli ; 1233, Gurukul Indraprastha (Gurgaon Dist.)

Cucumis Linn

Fruits glabrous or pubescent . . . . . *C. melo*
Fruits sparingly tuberculed, muricate with prickles . . . *C. sativus*

C. melo Linn. Sp. Pl. (ed. 1) 1753 ; FBI 2 : 630 ; Duthie & Fuller, op. cit. 2 : 51, t. 50

A creeping, hispid annual. Leaves scabrous. Flowers yellow in fascicles. Fruits variable in shape, spherical, ovoid, elongate or contorted.

Commonly cultivated for its fruit in the villages abutting Jamuna River, on sandy beds and along canal banks.

Local name : Kharbuza ; English name : Musk melon
Flowers and Fruits : June-Sept
J. K. Maheshwari 680

Fruits cylindrical, bursting spontaneously . . . . . *C. melo* var. *momordica*

Fruits oval or cylindrical to elongate, not bursting as above . . . . . *C. melo* var. *utilissimus*

[illegible]

C. [illegible] Linn. [illegible] momordica Duthie & Fuller [illegible]

[illegible]

C. [illegible] [illegible] Duthie & Fuller [illegible]

[illegible]

Local name : Kakri
Flowers and Fruits : April-Sept.
J. K. Maheshwari 681

C. sativus Linn. Sp. Pl. 1012. 1753. FBI. 2. 620. Duthie & Fuller, op. cit. 2. 53. t. 5.

A scabrous, trailing or climbing annual. Leaves 3 to 5-lobed, coarsely dentate, very rough. Flowers yellow, male [illegible] in axillary clusters and females solitary or fascicled. Fruits ovate or oblong, very variable in size. Seeds numerous, white.

Cultivated.

Local name : Khira
Flowers and Fruits : May-Sept.

Citrullus Schrad. nom. cons.

Fruits globose, very bitter, not exceeding 7.5 cm. in diam. C. colocynthis

Fruits subglobose or oblipsoid, usually sweet, up to 25 cm. in diam. C. vulgaris

C. colocynthis (Linn.) Schrad. in Linnaea 12. 414. 1838. FBI. 2. 620. Duthie & Fuller, op. cit. 2 : 57.

Cucumis colocynthis Linn. Sp. Pl. 1011. 1753.

A perennial trailing, scabrid herb. Leaves ovate or [illegible] to 10 cm. deeply 3-lobed, lobes sometimes pinnatifid. Flowers yellow. Fruits globose, striped with dark green and white, pulp spongy, very bitter.

Grows commonly in the sandy tracts near Nojulgarh, Khera, Nagaur

[illegible]

[illegible]

J. K. M[illegible]

[illegible] **vulgaris** Schrad. [illegible]

[illegible]

[illegible] Flowers [illegible] white [illegible]

[illegible]

[illegible] Tindora [illegible] English name [illegible]

Flowers June July

J. K. Maheshwari 1445

[illegible] **vulgaris** Schrad. var. **fistulosus** Duthie & [illegible] 46 47

1883 FUGP 375

Citrullus fistulosus Stocks in Hook. Icon. Plant. 3 [illegible]

Distinguished from the main species by its fistulose stem and petioles. Fruits depressed at each end, light apple green.

Cultivated. The fruit is used as pickle and vegetable.

Local name : Tindu ; Tendu ; Tenasi

Flowers and Fruits : Rainy season

J. K. Maheshwari 678

Coccinia Wt. & Arn.

C. cordifolia (Linn.) Cogn. in DC. Mon. Phan. 3 : 529. 1888

Bryonia cordifolia Linn. Sp. Pl. 1012, 1753

Coccinia indica Wt. & Arn. Prodr. 347, 1834

Cephalandra indica Naud. in Ann. Sc. Nat. (ser. 5) 5 : 16. 1866 ; FBI 2 : 621

A pretty, twining or spreading shrub. Leaves 3 to 5-lobed or angled, cordate, shining, margins distantly glandular-ciliate. Flowers white. Fruits fleshy, ovoid or oblong, bright red when ripe. Seeds embedded in red pulp.

Common throughout, spreading or twining rather [illegible] trees and shrubs. The green fruits are used in curries, also said to be useful for diabetes. The ripe fruit is eaten as such. Parrots and squirrels are said to like it.

Local name : Kundru ; Kandori ; Kutru ; Ram kuchi [illegible]

[illegible]

[illegible] Duch. [illegible] Lamk. [illegible] 1786. FBI 2. 652. Fl. Cyp. 377.

[illegible] circular to reniform in outline. Flowers yellow. Peduncle [illegible] not expanded at the attachment.

Local name: Sitaphal Kaddu, English name: Ree gourd or Red pumpkin.

C. pepo [illegible] Sp. Pl. 1010. 1753, Bailey, Man. Cult. Pl. 952.

[illegible] annual. Leaves usually prominently lobed. Flowers yellow. Peduncle angled, expanded at the top. Fruits large, furrowed. [illegible] cultivated.

Local name: Vilayati kaddu, English name: Squash or Vegetable marrow.

49. Cactaceae

Opuntia Mill.

Spines pale yellow, some curved	*O. dillenii*
Spines tawny-brown or black, all straight . . .	*O. elatior*

O. dillenii Haw. Pr. Succ. 79. 1812, FBI. 2. 657. Barkly in RBSI. 4(6): 3.4, 1911.

A horny bush up to 2 m. tall. Branches jointed, joints more or less obovate. Flowers yellow or tinged with red. Berries purple, pear-shaped, truncate.

Native of S. America. Introduced on the Ridge and in the plains where it has become naturalized and at places forms dense thickets. Used for hedging.

[illegible]

50. Molluginaceae

[illegible]
Flowers in axillary fascicles : seeds [illegible]
Flowers in terminal cymes : seeds [illegible]

[illegible]

Gisekia Linn

G. pharnaceoides Linn. Mant. 562, 1771 ; FBI. 2 : 664 ; FI GP [illegible]

A prostrate or ascending herb, up to 20 cm. tall. Branches subflexuose. Leaves 1.2-3 x 0.4-0.8 cm., linear, subfleshy. Flowers small, yellowish, in lax, terminal and axillary cymes.

Occurs on hard, dry, sandy-clayey soil which is known locally as 'Dumat'. I collected this plant from the fallow fields of Najafgarh and Shahdara. Occasionally it is found on the lawns and along roadsides in sandy places.

Flowers and Fruits : July-Sept.

J. K. Maheshwari 235, Shahdara ; 289, Okhla

Glinus Linn.

Plant densely stellate-hairy . . . . . *G. lotoides*
Plant glabrous . . . . . *G. oppositifolius*

G. lotoides Linn. Sp. Pl. 463, 1753

Mollugo lotoides Kuntze, Rev. Gen. 264, 1891

M. hirta Thunb. Prodr. Pl. Cap. 24, 1794 ; FBI. 2 : 665 ; FI GP 1 : 386

A prostrate or ascending stellately hairy, annual herb. Branches radiating in all directions, 15-45 cm. long. Leaves opposite or in whorls of 3-5, suborbicular, obovate or elliptic. Flowers green, 2-6, in subsi

4 [illegible] Petals [illegible] Seeds [illegible] tubercled [illegible] scaly [illegible] Seed [illegible]

[illegible] Dry [illegible] Dainty [illegible] of June [illegible] from [illegible] R [illegible] [illegible] flats on the dried up [illegible] and [illegible] of [illegible] Occasional on the Ridge

Flowers and Fruits April July

J K Maheshwari 861 near Jamuna River

G. appendiculatus (Linn.) DC in Bull. Herb. Boiss II 1 559 19[illegible]

Stellaria appendiculata L on Sp Pl 89 1753 FUGP 1 387

M spergula Linn. Syst. 881, 1759, FBI 2 : 662.

A trailing or diffuse much-branched, glabrous herb. Stems leafy Leaves 10-25 x 5-10 mm. usually in whorls, spathulate obovate or elliptic. Flowers white, 5 mm. across, on slender pedicels, clustered at the nodes. Stigmas 3. Capsules 3-celled. Seeds deep brown tuberculate, with a small, white scale curved around them

Not common in the area. Found on moist or somewhat dry sandy or clayey soils of fallow and cultivated fields.

Flowers and Fruits - July-Sept.

J. K Maheshwari 270, low lands of Najafgarh

Mollugo Linn

Leaves linear or whorled at the nodes . . . . . *M cerviana*
Leaves radical . *M nudicaulis*

M cerviana (Linn.) Ser in DC Prodr 1 392, 1824, FBI 2 663, FUGP 1 387

Pharnaceum cerviana Linn. Sp. Pl. 272, 1753

An erect slender, small glabrous herb Branches umbellate Leaves 10-20 x 1 mm., in whorls of 4-8 at each node Flowers in umbellate or trichotomous cymes Sepals persistent Capsules pale brown, globose, many-seeded dehiscence by 3 valves. Seeds pale or deep brown, reticulate, bluntly ridged on the back.

Common in moist or dry situations on waste lands and in cultivated fields

Flowers and Fruits : July-Sept

J K Maheshwari 337, Haiz Khas

M nudicaulis Lamk Encycl 4 234 1797, FBI 2 664, FUGP 1 388

A glabrous [illegible]

[illegible] black [illegible]

Local name [illegible]

Flowers and Fruits : June [illegible]

J. K. Maheshwari 389 : 600

51. Aizoaceae (Ficoideae)

Trianthema [illegible]

Stamens 5

Flowers rosy-pink : styles 2

Flowers greenish ; style [illegible]

Stamens 0-20 ; flowers pinkish or white ; style [illegible]

T. govindia Buch.-Ham. ex G. Don, Gen. Syst. [illegible] Kew Bull. 264, 1952

T. pentandra auct. plur. (non Linn.).

A prostrate, deep-rooted herb, many-branched from a [illegible] Branches often dull pink in hue. Leaves [illegible] cm subsessile. Flowers rosy-pink, in subsessile, axillary clusters. Styles 2 [illegible] mostly recurved. Capsules 4 × 3 mm. Seeds black dull.

Common in dry waste places of the area and on the Ridge. Often associated with other herbs. The pink-coloured young fruits are attractive.

Local name : Santhi

Flowers and Fruits : June-Sept.

J. K. Maheshwari 380 : 1171

T. crystallina (Forsk.) Vahl, Symb. Bot. 1 : 32 (1790) : EBI 2 : 660 ; FUGP. 1 : 385.

Papularia crystallina Forsk. Fl. Aegypt.-Arab. 69, 1775.

A mat-forming, prostrate perennial herb with a long root system. Stems dichotomous, caespitose. Leaves 5-10 × 1.5-3 mm, succulent. Flowers solitary or in twos or threes in the axils or in the forks of the branchlets. Stamens 5. Style 1, reddish. Capsules 2-3 × 5 mm, 2-seeded. Seeds discoid, black.

Common during the pre-monsoon as well as during the [illegible] days, forms a green carpet on sandy, dry soils. The plant can serve as an efficient sand binder due to this characteristic habit.

Local name : Nuka : Machchhi
Flowers and Fruits : May-Dec.
J. K. Maheshwari Sci. Analyst 363

1. **portulacastrum** Linn. Sp. Pl. 223, 1753 ; Gamble, Fl. Pres. Mad. 550 ; *P. oleracea* Linn. Mant. 69, 1767 ; FBI 2 : 660 ; Fl. GP 1 : 390.

A prostrate, glabrous or pubescent succulent herb. Stems often tinged purplish. Leaves unequally paired, petiole dilated into a sheath at its base. Flowers pinkish, solitary, in pouch-like petiolar sheaths. Anthers pink or white. Style solitary. Capsules 5 × 3 mm., breaking transversely into an upper coriaceous lid and a lower membranous cup. Seeds dull black.

Abundant in wet cultivated fields as well as in waste, dry or moist places, where it spreads aggressively. Occurs on the Ridge as a herbaceous undergrowth. White flowers also occur in this species.

Local name : Sunth ; Sunthi
Flowers and Fruits : June-Dec.
J. K. Maheshwari 72 ; 1254

52. Umbelliferae (Apiaceae)

Leaves simple ; umbels simple ; flowers pink . . . . . *Centella*
Leaves compound ; umbels compound :
  Primary ridges of fruit conspicuous, secondary ridges inconspicuous or absent .
    Fruits laterally compressed . . . . . *Trachyspermum*
    Fruits not laterally compressed but oblong, ellipsoid or subglobose
      Flowers yellow, ultimate leaf segments linear
        Fruits oblong or ellipsoid, the ribs not winged . . . *Foeniculum*
        Fruits dorsally compressed and narrowly winged . . *Anethum*
      Flowers white, ultimate leaf segments not linear . . . *Oenanthe*
  Secondary ridges of fruit prominent :
    Fruits bristly . . . . . *Daucus*
    Fruits glabrous
      Fruits subglobose ; bracts absent . . . . . *Coriandrum*
      Fruits cylindric ; bracts linear . . . . . *Cuminum*

Centella Linn.

C. asiatica (Linn.) Urban in Mart. Fl. Bras. 11 : 287, 1879 ; Fyson, Fl. Nilgiri & Pulney Hill-tops 3 : 346 ; Santapau in RBSI 16(1) : 124, 1953

Hydrocotyle asiatica Linn. Sp. Pl. 234, 1753 ; FBI 2 : 669 ; Fl. GP 1 : 391.

A creeping herb, rooting at the nodes. Leaves several at each node,

[illegible] or red form, on long petiole [illegible] mm. Flowers small, pink, in clusters of umbels. Fruits [illegible] mm. [illegible] fully compressed. Seeds brown, [illegible] [illegible]

Common and abundant along the irrigation [illegible] fruit orchards as well as the suburbs, forming [illegible] as an antidote to cholera and heat effects and [illegible] it may cause [illegible] if taken in [illegible]

Local name : Brahmi
Flowers and Fruits : April-July
J. K. Maheshwari 1103, Azadpur Road near railway line

Trachyspermum Link nom. cons.

T. ammi (Linn.) Sprague in Kew Bull. 228, 1929
Sison ammi Linn. Sp. Pl. 252, 1753, in part
Carum copticum Hiern in Oliver, Fl. Trop. Africa 3 : 12 : 187
FBI. 2 : 682 ; FUGP. 1 : 394

An erect annual up to 1 m tall. Leaves 2 to 3-pinnate. Flowers white, in compound umbels. Cremocarps about 1×1 mm. ovoid, muricate, compressed.

Cultivated for its fruits which are much used in local medicines and as a spice.

Local name : Ajwain
Flowers and Fruits : Nov.-March
J. K. Maheshwari 1345

Foeniculum Adans.

F. vulgare Mill. Gard. Dict. ed. 8 : 1768 ; FBI. 2 : 695 ; FUGP. 1 : 394

A glabrous herb. Leaves 2 to 4-pinnate, segments thread-like. Flowers yellow, in compound umbels. Fruits oblong or ellipsoid, ribbed.

Cultivated for its fruits and seeds which are used as condiment.

Local name : Sonf ; English name : Fennel
Flowers and Fruits : Jan.-March
J. K. Maheshwari 1364

Anethum Linn.

A. graveolens Linn. Sp. Pl. 263, 1753.
Peucedanum graveolens Hiern in Oliver, Fl. Trop. Africa 3 : 19, 1871
FBI. 2 : 709 ; Duthie & Fuller, Field & Gard. Crops 3 : 45, t. 90

A glabrous, branched, perennial herb. Leaves finely dissected, fennel-like. Flowers yellow. Fruits narrowly winged, 4×2 mm.

Cultivated for its fruits and seeds which are used in preparing curries.

The [illegible] are also used as a flavouring agent. Also met as an escape in [illegible] waste places.

Local name : [illegible]
Flowers and Fruits : Jan.-March
K. Maheshwari [illegible]

Oenanthe Linn.

O. javanica (Blume) DC. Prodr. 4 : 138. 1830; Duthie in Fl. [illegible] 2 : 116. 1949.

Sium javanicum Bl. Bijdr. 15 : 881. 1826.

Oenanthe stolonifera DC. Prodr. 4 : 138. 1830; FBI. 2 : 696; [illegible] op. cit. [illegible] : 195.

A stoloniferous glabrous fistular herb, 45-80 cm. high, decumbent. Leaves uni- to bipinnate; petiole sheathed; rachis flat or subterete. Flowers white, fragrant, in compound umbels. Carpels small, dorsally compressed, ridged, 3×1 mm.

Occurs in wet or muddy places along the small water channels of Delhi Canal which passes through the fruit orchards of the district. Met commonly along the canal bank running on either side of the railway line from Delhi to Azadpur and the neighbouring gardens.

Flowers and Fruits : April-May.
J. K. Maheshwari 1410, Azadpur (Railway Chowki 4 21 Bigah Bagh).

Daucus Linn.

D. carota Linn. Sp. Pl. 242. 1753; FBI. 2 : 718; Duthie & Fuller, op. cit. 3 : 92, t. 78.

A hispid, much-branched herb. Leaves pinnately decompound. Flowers white, numerous, in showy compound umbels; outer flowers zygomorphic. Fruits bristly along the secondary ridges, about 4×1 mm.

Extensively grown as a cold season crop for its fleshy, edible roots.

Local name : Gajar; English name : Carrot.
Flowers and Fruits : Jan.-March.
J. K. Maheshwari 1363.

Coriandrum Linn.

C. sativum Linn. Sp. Pl. 256. 1753; FBI. 2 : 717; Duthie & Fuller, op. cit. 3 : 40, t. 76.

A strongly smelling herb. Leaves decompound. Flowers purplish or white, in compound umbels; outer ones zygomorphic. Fruits subglobose, ribbed.

Commonly cultivated for its fruits and leaves which are used as

[illegible]

[illegible]

Conium [illegible]

C. cicutum [illegible] Sp. [illegible] 1753, 1881 2 : 718. Duthie & Fuller, op. cit. 40

A slender, glabrous annual. Leaves dissected into filiform segments. Flowers white in few-rayed compound umbels. Fruits cylindric ribbed, brown.

Cultivated for its aromatic fruits which are used in flavouring.

Local name : Zira

Flowers and Fruits : Jan.-March

J. K. Maheshwari 1444

53. Caprifoliaceae

Sambucus Linn.

S. nigra Linn. Sp. Pl. 269 (1753). Bailey, Man. Cult. Pl. 935

A small tree, with prominently lenticellate branches. Leaves 5 to 9-foliolate. Leaflets ovate or elliptic, serrate, glabrous. Flowers in 4-rayed broad cymes. Fruits globose, dark purple, 5-8 × 5-6 mm.

Planted in the hedges of gardens.

Flowers, Late summer

J. K. Maheshwari 1127

54. Rubiaceae

Erect or prostrate herbs
- Flowers in axillary and terminal paniculate cymes . . *Oldenlandia*
- Flowers whorled or in axillary heads . . *Borreria*

Trees; flowers in globose heads . . . . . *Mitragyna*

Short or tall shrubs
- One calyx lobe expanded into a coloured leaf . . *Mussaenda*
- Calyx lobes not expanded .
  - Flowers in terminal, trichotomously branched panicles, mauve or white . . . . . *Hamiltonia*
  - Flowers solitary, cymose or in corymbose cymes :
    - Stipules multisetose or multifid, flowers pale purple . . *Pentas*

[illegible]

Stipules [illegible] as above [illegible]
Leaves [illegible] whorls of 4 [illegible] as described near base of [illegible] *Hedyotis*
[illegible] tube [illegible] bracular
Leaves usually opposite [illegible]
Flowers usually solitary axillary white [illegible]
Flowers in dense [illegible] [illegible] *Exora*

Oldenlandia Linn

A slender diffuse herb flowers white [illegible]
An erect, stout herb, flowers pale blue [illegible]

O. corymbosa Linn. Sp. Pl. 119, 1753, FBI 3 : 64, FUGP. 1 : 413

A small prostrate, straggling or ascending herb. Leaves [illegible] linear or linear-lanceolate. Stipules bristly. Flowers white, [illegible] or on 2-flowered peduncles. Capsules didymous, 1.5-2 × 2 mm. Seeds angular.

Found in fields and waste places on moist ground. Variable in habit and height. It appears like a species of *Mollugo*.

Flowers and Fruits: Sept.-Oct.
J. K. Maheshwari 1291, Vallabgarh; 1334

O. aspera DC. Prodr. 4 : 428, 1830, FBI 3 : 68 ; FUGP 1 : 415

An erect, slender herb, up to 45 cm. tall. Branches trichotomous, scabrous. Leaves opposite or fasciculed, linear-lanceolate 4-7 × 0.4 cm. Flowers minute, pale blue, in terminal cymes. Capsules 3 × 3 mm., crowned by 4 calyx teeth. Seeds minute, angular.

A weed in fallow and cultivated fields. Grows on moist, sandy soil and used as fodder.

Local name : Gobi
Flowers and Fruits : Aug.-Sept.
J. K. Maheshwari 1231, Gurukul Indraprastha Fields (near Faridabad)

Borreria G. F. W. Mey. nom. cons.

Erect, small herbs; flowers white . . . . . *B. stricta*
Procumbent, larger herbs, flowers pale blue or pale violet . . . . . *B. hispida*

B. stricta (Linn. f.) K. Schum. in Engl. & Prantl, Nat. Pflam. 4(4) 143, 1891. Blatt. in JBNHS 36 : 794, 1933

Spermacoce stricta Linn. f. Suppl. 120, 1781, FBI 3 : 200, FUGP 1 : 429

An erect, small herb. Stems short, scabrid with recurved, scabrous hairs. Leaves whorled, ovate-oblong or linear. Stipules united into a

[illegible]

[illegible] Flowers [illegible]

J. K. Maheshwari [illegible] New Delhi Ridge

B. biglobosa K. Schum. in Engl. & Prantl Nat. Pflanzenfam. [illegible] 44 [illegible] 429.

Spermadictyon biglobosum Roxb. Sp. Pl. 102. 1753. FBI 3. 300. [illegible]

A [illegible] about [illegible] deep-rooted [illegible] Branches [illegible] leathery. Flowers pale [illegible] or pale violet, in axillary whorls, [illegible] Capsules about 4 × 2 mm, oblong, hairy, [illegible] carpels dehiscing ventrally. Seeds [illegible] dark brown, grooved ventrally.

Comes on the Ridge during the monsoon period. Also found in the [illegible] as a weed in cultivated and unused grounds on damp sandy soil. Duthie in FUGP (loc. cit.) reports that one carpel remains indehiscent. I have seen both mericarps to dehisce with one seed in each. Used as fodder.

Local name : Satgathiya; Ghathiyaghas, Gathhanpan
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 336, Hauz Khas

Mitragyna Korth. nom. cons.

M. parvifolia (Roxb.) Korth. Obs. Nancl. Ind. 19, 1839, FUGP 1. 408. Parker, For. Fl. 276.

Nauclea parvifolia Roxb. Pl. Cor. 1 : 40. t. 52. 1796.

Stephegyne parvifolia Korth. in Verh. Nat. Ges. 161, 1840. FBI 3. 25.

A large or medium-sized, deciduous, sweet-scented tree. Leaves variable in shape and size, orbicular, oval or obovate. Flower heads white or light yellow, about 2.5 × 2.5 cm. Stigma mitriform, white. Cocci 2, dehiscent. Seeds winged.

Probably introduced on the Ridge. Some trees occur on the Old Delhi Ridge near Chauburjha Road. Also planted as a roadside tree along side-lanes of New Delhi. The flowering and fruiting is very quick.

Local name : Kadam
Flowers : Aug.-Sept. Fruits : Cold season
J. K. Maheshwari 278, Old Delhi Ridge

Mussaenda Linn.

M. luteola Delile, Cent. Pl. Méroé 65. t. 62. 1826. Bor. & Ruiz 80. f. 50. Pl. 25.

[illegible] Leaves ovate to elliptic, [illegible] to [illegible] Flowers yellow, in terminal [illegible] red [illegible] Flowers in each corymb [illegible] [illegible] yellow coloured leaf [illegible] ornamental shrub in gardens.

[illegible] March-April, Aug.-Oct.

J. K. Maheshwari [illegible] University Campus.

Hamiltonia Roxb.

H. suaveolens Roxb. Hort. Beng. 15, 1814, nom. nud. & Fl. Ind. 1 : 534 [illegible] 3 : 197 [illegible] 1 : 476. Bor & Raiz. 97, f. 62. Pl. 34, 35.

An erect shrub. Leaves ovate, elliptic or lanceolate, rough, coriaceous. Flowers pink, white or bluish, scented, numerous, in terminal, trichotomously branched panicles. Capsules ellipsoid.

Cultivated as an ornamental shrub in gardens and bungalow hedges.

Local name : Bam-champa.
Flowers : Dec.-Feb.
J. K. Maheshwari 1365, Talkatora Gardens.

Pentas Benth.

P. lanceolata (Forsk.) K. Schum. in Engl. & Prantl, Nat. Pflam. 4(4) 29. 1891. Bailey Man. Cult. Pl. 931.

Ophiorrhiza lanceolata Forsk. Fl. Aegypt.-Arab. 42, 1775.

Pentas carnea Benth. In Bot. Mag. t. 4086, 1844.

An erect undershrub, up to 1 m. tall. Leaves ovate or elliptic, tapering at ends. Stipules ñhform, with ciliate margins. Flowers bluish-pink or pale purple, in terminal corymbs.

Grown in gardens as an ornamental plant.

Flowers : July-Oct.
J. K. Maheshwari 1366, Sunder Nursery.

Hamelia Jacq.

H. patens Jacq. Enum. Pl. Carib. 16, 1760 & Select. Am. 72, Bor & Raiz. 96, f. 61, Pl. 32, 33.

H. erecta Jacq. Enum. Pl. Carib. 16, 1760.

An evergreen, handsome, woody shrub. Leaves whorled, elliptic, obovate or oblanceolate. Stipules interpetiolar. Flowers reddish-yellow, in a corymbose head. Berries ovoid or globose.

Commonly cultivated in gardens and hedges around bungalows.

Flowers : May-Oct. Fruits : Nov.
J. K. Maheshwari 65, University Campus.

G. jasminoides [illegible] Trans. 51: 935–961. Bailey [illegible] 933.
C. florida [illegible] Sp. [illegible] 365 [illegible]
A shrub, with [illegible] G. [illegible] of ternate [illegible] elliptic, coriaceous [illegible] flowers creamy white, fragrant, large, solitary [illegible] pored.
Cultivated in gardens and hedges around bungalows.
Flowers : Aug.-Sept.
J. K. Maheshwari [illegible] Rashtrapati Bhavan Campus.

Ixora Linn.

I. coccinea Linn. Sp. Pl. 110, 1753. Bor & Raiz. 86, Pl. 28.
A shrub. Leaves oval with cordate, amplexicaul base. Flowers deep red, attractive in corymbs. Berries hard.
Grown as an ornamental for its flowers.
Flowers April-Aug.

55. Compositae (Asteraceae)

GROUP I. LIGULIFLORAE—Juice milky. Flowers all ligulate.
Tribe 1. *Cichorieae*. Leaves radical or alternate. Heads homogamous. Involucral bracts membranous. Anther bases sagittate, rarely tailed. Pappus setose, paleaceous or absent.
Pappus extremely short, of reddish or green scales — 1. *Cichorium*
Pappus of simple hairs
Achenes usually beaked, narrowed at the ends
Heads yellow, achenes fusiform, beaks short — 2. *Youngia*
Heads yellow, pink [illegible] blue, achenes compressed or flattened, beaked; plants cultivated — 3. *Lactuca*
Achenes not beaked, pappus white, soft and silky
Achenes columnar, truncate at both ends, heads cylindric . . . . . 4. *Launaea*
Achenes compressed, ovoid or obovoid, heads ovoid, campanulate or cylindric . . . . . 5. *Sonchus*

GROUP II. TUBULIFLORAE—Juice watery, disc florets tubular.
Tribe 1. *Vernonieae*. Flowers all bisexual and tubular, never yellow. Anthers cleft at the base. Heads distinct, many flowered. Pappus long, copious . . . 6. *Vernonia*
Tribe 2. *Eupatorieae*. Differs from above in having anthers blunt at the base.
Heads in dense, terminal corymbs; anthers appendaged at the apex . . . . . 7. *Ageratum*

Tribe 3. *Inuleae*. Disc florets yellow, also in some the ray florets [illegible] but not [illegible]
Heads [illegible] on lateral [illegible] [illegible]

Heads not as above
Prostrate [illegible] herbs, leaves sinuately pinnatifid . 9. *Grangea*
Erect herbs, leaves entire, toothed or cut :
Ray florets [illegible] not yellow [illegible]
Florets yellow, ray florets usually tubular [illegible]
Tribe 4. *Inuloideae*. Differs from *Asteroideae* in its anthers [illegible] *Laggera*)
Heads homogamous, sessile, with two large bracts, marshy herbs 12. *Cladanthus*
Heads heterogamous
Heads rayed
Pappus in a single row, scanty or absent 13. *Pluchea*
Pappus double-rowed, outer scaly 14. *Pulicaria*
Heads not rayed
Hoary or woolly herbs, heads corymbose or fasciculed 15. *Gnaphalium*
Hoary pubescent or villous herbs, heads corymbose or paniculate :
Herbs, often aromatic, bracts narrow .
Anther bases tailed . 16. *Blumea*
Anther bases not tailed . 17. *Laggera*
Robust herbs or undershrubs; bracts broad 18. *Pluchea*
Tribe 5. *Heliantheae*. As in *Asteroideae* but the style branches, each with a crown of hairs below the stigma, receptacle with chaffy bracts.
Heads monoecious; achenes 2 to each head 19. *Xanthium*
Heads heterogamous, achenes many to each head:
Small herbs, with narrowly linear leaf segments 20. *Glossocardia*
Erect or prostrate herbs and undershrubs, with leaves not as above
Pappus absent . 21. *Eclipta*
Pappus of 2-4, persistent, spreading awns, ray florets sterile . . . . . 22. *Bidens*
Pappus plumose or of scales, bristles or awns .
Ligules of ray florets small, white, pappus of 2-5 bristles 23. *Blainvillea*
Ligules of ray florets large, whitish, cream-coloured or yellow
Ray florets sterile (rarely fertile in *Viguieria*), yellow, conspicuous .
Achenes pubescent . . . . . 24. *Viguieria*
Achenes glabrous . . . . 25. *Helianthus*
Ray florets fertile (rarely neutral in *Verbesina*) :
Herbs, pappus of leathery bristles, ligules of ray florets

whitish or cream-coloured
Shrubs, pappus of 2 awns, sometimes 1, 3 or 0 . . . 26. *Tridax*

Tribe 6. *Anthemideae*. As in *Heliantheae*, but the receptacle is bracteate. . . . 27. *Anthemis*
The involucral bracts with membranous tips, pappus none.
Small herbs, heads solitary on long peduncles.
Large herbs or shrub-like, heads in panicles . . . 28. *Cotula*

Tribe 7. *Cynareae*. Leaves often spinous. Flowers all tubular. . . . 29. *Artemisia*
Involucral bracts often with spinous tips. Receptacle mostly bristly.
Heads 1-flowered, crowded in spinous globose clusters . . . 30. *Echinops*
Heads many-flowered, separate.
Heads yellow or orange-yellow, pappus absent . . . 31. *Carthamus*
Heads purplish violet or blue.
Erect, robust herbs.
Leaves very spinous, pappus soft, feathery . . . 32. *Cirsium*
Leaves hardly spinous; pappus of plumose bristles . . . 33. *Cynara*
Straggling herbs, heads pale purple . . . 34. *Volutarella*

Tribe 8. *Mutisieae*. Ray and usually disc florets bilabiate.
White tomentose herbs, involucral bracts spinescent . . . 35. *Dicoma*

The following artificial key is provided to facilitate quick determination of the genera.

1. Flowers white, whitish or creamy .
  2. Heads compound, with two large bracts ; marshy herbs . . . 12. *Caesulia*
  2. Heads simple and not as above :
    3. Male and female heads separate, the latter 2-flowered . . . 19. *Xanthium*
    3. Male and female heads not separate :
      4. Leaves compound, pappus of 2-4, spreading awns . . . 22. *Bidens*
      4. Leaves simple :
        5. Involucral bracts spinescent , heads subsessile . . . 35. *Dicoma*
        5. Involucral bracts not spinescent ; heads short or long-peduncled :
          6. Pappus absent or of a few, minute teeth, ligule of ray florets small . . . 21. *Eclipta*
          6. Pappus of 2-5 bristles ; heads heterogamous, ligules of ray florets small . . . 23. *Blainvillea*
          6. Pappus of 5 scales, heads homogamous . . . 7. *Ageratum*
          6. Pappus scales awned and plumose, ligules of ray florets large . . . 26. *Tridax*

[illegible] plants or [illegible] [illegible] or prostrate or low
stems homogamous
8. [illegible] and [illegible] to spinose 3. *Carthamus*
8. [illegible] and [illegible] in their spines
9. [illegible] more or less spin-[illegible] heads [illegible] 5. *Silybum*
9. Leaves chiefly radical or stems slender and erect spreading or prostrate
10. Leaves often permanently crisped achenes beaked species cultivated 3. *Lactuca*
10. Leaves not crisped achenes not beaked species wild
11. Heads small, below 8 mm across, corymbose or arranged 2. *Youngia*
11. Heads larger above 10 mm across, racemose or paniculate 4. *Launaea*
7. Heads heterogamous
12. Leaves deeply pinnatisect or dissected into filiform or very narrowly linear segments
13. A tall herb, 1-2 8 m high, heads minute, arranged in a panicle 29. *Artemisia*
13. Small herbs, up to 20 cm. high, heads usually solitary, axillary and terminal :
14. Pappus of two, spreading awns 20. *Glossocardia*
14. Pappus copious, of setose hairs, heads showy, above 1 cm. in diam. . . . . 36. *Hymenatherum*
14. Pappus scarce or shortly ear-shaped; heads not showy, below 1 cm. in diam. . . . . 28. *Cotula*
12. Leaves not divided :
15. White-woolly or woolly herbs, leaves woolly or not or only beneath :
16. Heads crowded into corymbose or ovoid clusters . . . . . 15. *Gnaphalium*
16. Heads solitary, not clustered :
17. Plants shrubby; heads above 2.5 cm. in diam . . . . . 27. *Verbesina*
17. Plants herbaceous; heads up to 2.5 cm. in diam. .
18. Habit erect, leaves broad auriculate at the base; heads above 1 cm in diam, . . . 13. *Vicoa*
18. Habit diffuse or ascending; leaves half-amplexicaul or not, heads below 1 cm. in diam. . . . . 14. *Pulicaria*
15. Glabrous or pubescent herbs and shrubs :
19. Heads in unilateral racemes forming a panicle, golden-yellow, species introduced 8. *Solidago*

19. Heads not as above
20. Roots [illegible] tubers [illegible] 24. *H. [illegible]*
20. Roots not [illegible]
21. Shrubs
[illegible] Rays [illegible] [illegible] Disc exceed [illegible] margined than [illegible]
22. Rays sterile, achenes [illegible] flat, when flattened not [illegible] edged
21. Herbs or undershrubs
24. *[illegible]*
23. Pappus cupular; prostrate leafy herb 9. *[illegible]*
23. Pappus of 2-4, spreading awns; erect herbs 2. *B[illegible]*
23. Pappus distinct, of few or several hairs or bristles
24. Anther bases sagittate or tailed
25. Leaves broadly auricled, heads radiate . . . . . 13. *Senecio*
25. Leaves not at all auricled, heads not radiate 16. *Blumea*
24. Anthers blunt at base
26. Ray florets ligulate, not yellow . 10. *Erigeron*
26. Florets yellow, ray florets usually tubular . . . . 11. *Conyza*

1. Flowers pale or bright blue
27. Plants with spinous leaves; heads 1-flowered, crowded in spinous globose clusters . . . . 30. *Echinops*
27. Plants unarmed; heads many-flowered:
28. Sap milky, leaves stem-clasping 1. *Cichorium*
28. Sap watery, leaves not stem-clasping 33. *Cynara*

1. Flowers pink, rosy-pink, lilac to purplish or very faintly pinkish-purple:
29. Leaf margins and (or) involucral bracts spinose, spinescent or awned:
30. Habit erect, leaves woolly beneath 32. *Cirsium*
30. Habit straggling or diffuse, leaves not woolly beneath . . . . . 34. *Volutarella*

29. Leaf margins or involucral bracts not spine-tipped
31. Heads homogamous:
32. Leaves at least the lower ones opposite, pappus scales 5 . . . . 7. *Ageratum*

12. Leaves alternate; pappus of several hairs . . . 6. *Vernonia*

12. Heads heterogamous . . .

13. Hairy or lacunate herbs; not aromatic; anthers blunt at base . . . . . 11. *Conyza*

14. Hairy-pubescent or villous herbs; aromatic; anthers tailed or sagittate . . . . . 17. *Laggera*

14. Herbs or shrubaceous; often aromatic; bracts narrow . . . . . 16. *Blumea*

15. Leaves decurrent; anther bases sagittate, not tailed . . . . . 17. *Laggera*

15. Leaves not decurrent; anther bases tailed . . . . . 16. *Blumea*

14. Undershrubs or shrubs; bracts broad . . . . . 18. *Pluchea*

1. Cichorium Linn.

C. intybus Linn. Sp. Pl. 813. 1753, Bailey. Man. Cult. Pl. 983.

An erect or prostrate, hispid herb. Latex white. Leaves oblanceolate or broad-lanceolate, stem-clasping; basal leaves usually pinnately divided; upper ones undivided or lobed. Heads bright blue, sessile, homogamous. Achenes glabrous. Pappus extremely short, scaly.

Native of Europe and found wild in N.W. Himalaya from 1,2,3,3 km. Found mixed in the fields of winter season crops, often as an escape.

Local name : Kasni
Flowers : April-May
J. K. Maheshwari 1019, Gaushala Agricultural Farm (Azadpur).

2. Youngia Cass.

Y. japonica (Linn.) DC. subsp. **japonica**

Crepis japonica (Linn.) Benth. Fl. Hongk. 194, 1861.
Prenanthes japonica Linn. Mant. 107, 1767.

An erect, slender herb. Leaves mostly radical and rosette-forming, sinuately lobed or pinnatifid, membranous, 6-15 × 2-4 cm. Floral shoots slender, erect, corymbosely branched near the top. Heads up to 6 × 9 mm., yellow, homogamous. Achenes reddish-brown. Pappus silvery.

Occurs in moist shady places of gardens. Also found in the crevices among stones of embankments.

Flowers and Fruits : Feb.-May
J. K. Maheshwari 620, Roshanara Gardens, 1013, Azadpur Road, near railway lines.

3. Lactuca Linn.

L. sativa Linn. Sp. Pl. 795, 1753, Bailey, Man. Cult. Pl. 984.

An erect, annual, leafy herb. Radical leaves [illegible] auriculate. Heads yellow, in long, irregular panicles.

Grown as garden vegetable for its crisp edible [illegible] able in the market from October to March. [illegible] type and Erect upright [illegible] are grown in the area.

Local name : Salad
Flowers : Feb.-May
J. K. Maheshwari 1397

4. Lactuca Cass.

Heads terminal, on paniculately branched floral shoots

Heads in racemes, on floral shoots and its branches . . *L. asplenifolia*
. *L. nudicaulis*

L. asplenifolia Hook. f. in FBI 3 : 415. 1881 ; FlGP 1 : 494.

A perennial glabrous herb. Leaves sinuately lobed + pinnatifid, paniculate. Achenes columnar.

Floral shoots many from the base paniculately branched leaves pan-

Common in cultivated and fallow fields and in waste places on dry gravelly soils. It is heavily infected by a rust, *Puccinia butleri*, Syd. the orange-coloured pustules of which can be seen during the months of February and March especially in the trans-Jamuna fields.

Local name : Gobi
Flowers and Fruits : Winter season
J. K. Maheshwari 155

L. nudicaulis Hook. f. in FBI 3 : 416, 1881, FlGP 1 : 494.

A glabrous herb, with radical leaves. Latex yellow. Floral shoots spreading, usually naked. Leaves sinuately lobed or pinnatifid, teeth white. Heads more or less subracemose, yellow. Achenes columnar, ribbed, much shorter than the pappus.

Common all over the area in waste localities.

Local name : Gobi
Flowers and Fruits : Sept.-March
J. K. Maheshwari 836 ; 912, New Delhi Ridge

5. Sonchus Linn.

Involucral bracts glandular ; achenes transversely rugose *S. arvensis*
Involucral bracts more or less glabrous
Leaves sharply dentate or spinous-dentate, auricles appressed *S. asper*
Leaves with small teeth ; auricles spreading *S. oleraceus*

S. arvensis Linn. Sp. Pl. 794, 1753 ; FBI 3 : 414 FUGP 1 : 493

A perennial erect herb 60-100 cm. tall. Stems hollow, [illegible] branched, glandular-hairy above. Heads pale yellow [illegible] white or bluish, corymbose. Peduncles and bracts glandular hairy. Achenes ribbed, [illegible] brown.

[illegible] in waste places and fields. The latex is said to be [illegible] have [illegible]

Local name : Gubbi ; Pili dudh

Flowers and Fruits : Dec.-March

J. K. Maheshwari 802

S. asper Linn. Hill, Brit. Herb. 1: 47, 1756 ; FBI 3 : 414, FUGP 1 : 493

Sonchus oleraceus var. *asper* Linn. Sp. Pl. 794, 1753

An erect herb. Leaves entire, runcinate or pinnatifid, half amplexicaul, sharply dentate or spinose-dentate. Heads in umbellate cymes. Achenes 3-ribbed on each face.

Occurs in waste places.

Flowers and Fruits : Cold season.

S. oleraceus Linn. Sp. Pl. 794, 1753 ; FBI 3 : 414 ; FUGP 1 : 492

An erect annual, 60-100 cm. tall. Stems glaucous. Leaf auricles spreading. Heads borne in umbellate cymes. Achenes 3-ribbed on each side, muriculate.

Common in fields and waste places.

Local name : Pili dudhi

Flowers and Fruits : Cold season

6. Vernonia Schreb. nom. cons.

V. cinerea (Linn.) Less. in Linnaea 4 : 291, 1829 & 6 : 673, 1831 ; FBI. 3 : 233 ; FUGP. 1 : 441 ; Merr. Enum. 3 : 592.

Conyza cinerea Linn. Sp. Pl. 862, 1753

An erect, variable herb. Leaves ovate to lanceolate. Heads pink, rosy pink or lilac in corymbs, homogamous, small, about 1 × 0.7 cm. Achenes terete, hairy. Pappus white.

Common throughout on wet or dry soils. Occurs on the Ridge in the crevices of stones. During the monsoon months this plant is erect, up to 1 m. tall, after the monsoon it is a small plant with a more diffuse habit.

Flowers and Fruits : Rainy and winter seasons

J. K. Maheshwari 328; 348

7. Ageratum Linn.

A. conyzoides Linn. Sp. Pl. 839, 1753 ; FBI 3 : 243 ; FUGP 1 : 443 ; Merr. Enum. 3 : 597

An erect hairy annual herb [illegible]
Leaves broad [illegible]
faintly pink or purple [illegible]
series 5. Achenes [illegible]
[illegible]
[illegible]
[illegible]
carpet. Used as cattle fodder.

Local name : [illegible] Tandakano : Blackmustard
Flowers and Fruits : [illegible]
J. K. Maheshwari 103 [illegible] Rashtrapati Gardens

8. Solidago Linn.

S. canadensis Linn. Sp. Pl. 878, 1753; Bailey, Man. Cult. Pl. [illegible]
A woody shrub. Leaves lanceolate, [illegible] scale [illegible] 8-15 cm. Heads 3-5-4 mm., bright yellow, [illegible] in dense [illegible] recurved axillary racemes forming a pyramidal panicle.
Grown as a hedge in lawns and along foot paths in gardens.

English name : Golden rod
Flowers and Fruits : Oct.-Dec.
J. K. Maheshwari 529, University Campus

9. Grangea Forst.

G. maderaspatana (Linn.) Poir. Encycl. Suppl. 2 : 825, 1812 ; FBI 3 : 247 ; FUGP 1 : 446 ; Merr. Enum. 3 : 599.
Artemisia maderaspatana Linn. Sp. Pl. 849, 1753.
A prostrate, tufted, leafy herb, forming circular patches. Leaves sinuately pinnatifid, thick. Heads yellow, discoform, heterogamous, about 6×9 mm. Pappus cupular.
Found on dry, sandy-clayey soil and along Jamuna Banks on moist, silty soil.

Flowers and Fruits : Major part of the year
J. K. Maheshwari 159

10. Erigeron Linn.

Heads up to 6 mm. across, achenes glabrous ..... *E. canadensis*
Heads above 6 mm. across, usually about 12 mm., achenes laxly hairy ..... *E. bonariensis*

E. canadensis Linn. Sp. Pl. 863, 1753; FBI 3 : 254; FUGP 1 : 447.
An erect, much-branched, stout, hairy herb, up to 1 m. tall. Leaves 3-8 × 0.3-0.5 cm., narrowly linear. Heads heterogamous, 3-4 × 4-6 mm., in branched panicles, yellowish. Achenes flat, glabrous.

Occurs in moist shady places and waste grounds near fruit orchards and heads

Flowers and Fruits : May-July

J. K. Maheshwari 109, Sarai Rohilla Gardens

E. botariensis Lour. Sp. Pl. 863, 1753 Burtt in Kew Bull. 371, 1948

E. indicus Willd. Sp. Pl. 3 1955 1803

An erect, stout, deep-rooted, hirsute herb, 30-90 cm. tall, usually branching somewhat above the ground. Stems and branches with crowded ascending leaves. Leaves 4-10 × 0.5-0.8 cm., linear, entire. Heads numerous, 6-12 mm., in corymbose panicles, heterogamous. Ray florets whitish. Corolla of disc florets pale yellow. Achenes oblong, slightly curved, brown, loosely hairy.

Grows more or less gregariously in gardens, lawns and waste grounds and gives a characteristic appearance to the grassy grounds by its erect habit, closely set leaves and terminal panicles.

Local name : Phulai

Flowers and Fruits : Late summer and rainy seasons

J. K. Maheshwari 918, Timarpur

11. Conyza Less. nom. cons.

C. aegyptiaca Dryand. in Ait. Hort. Kew. 3 183, 1789 ; FBI. 3 : 258 FUGP 1 448.

An erect or procumbent, hirsute herb. Leaves pinnatifidly lobed. Heads corymbose or panicled, heterogamous, disciform, about 1 × 1 cm. Involucral bracts narrow. Pappus pinkish.

Found along Jamuna Banks in moist soil

Flowers and Fruits : Feb.-May

J. K. Maheshwari 1010

12. Caesulia Roxb.

C. axillaris Roxb. Pl. Cor. 1 64, t. 93, 1798, FBI 3 291, FUGP 1 462.

A prostrate or suberect, marshy herb. Leaves 7-15 × 1-1.8 cm., narrowly lanceolate; base auricled. Heads homogamous, axillary, sessile. Bracts 2. Flowers whitish. Achenes flat, one-ribbed on each side.

Occurs in marshy places near canals or in rice fields. Common in the cultivated and fallow fields of village Gheora.

Flowers and Fruits : Oct.-May

J. K. Maheshwari 556, Hindan River Banks

13. Vicoa Cass.

Erect, woody herbs, involucral bracts with recurved tips ..... *V. vestita*

Erect, rigid herbs, involucral bracts erect ..... *V. indica*

[illegible]

[illegible]

A [illegible] branched rigid herb. Leaves [illegible] sessile, lanceolate or [illegible] basal auricles rounded or hastate. Heads [illegible] 8 mm in diam. heterogamous. Involucral bracts [illegible]. Pappus of ray florets absent, of disc florets few slender hairs.

Common on dry soil of fields and unused ground.

Flowers and Fruits : Oct.-March.

J. K. Maheshwari 497, Najafgarh 499, Ozrabad, Jamuna Banks.

14. Pulicaria Gaertn.

P. crispa Sch. Bip. in Webb & Berth. Phyt. Canar. 3 : 323. 1836-1847; FBI 3 : 299 ; FUGP 1 : 466.

A stout, diffuse, white-woolly herb. Leaves ascending, half amplexicaul, linear-oblong or spathulate, undulate-crisped. Heads yellow, heterogamous, rayed. Achenes glabrous, oblong. Pappus much longer than the fruit.

Common in waste places and along Jamuna Banks in moist or dry, silty soils.

Local name : Haldwa

Flowers and Fruits : Feb.-Aug.

J. K. Maheshwari 914, Najafgarh.

P. angustifolia DC. Prodr. 5 : 479. 1834 ; FBI 3 : 299 ; FUGP 1 : 465.

A rare plant. Recorded from the Jamuna Ravines near Delhi and Agra by Duthie's FUGP (loc. cit.). I have not seen the plant anywhere.

A very variable herb. Leaves sessile, linear-oblong or [illegible] Ray florets [illegible] yellow. Achenes glabrate.

15. **Gnaphalium** Linn.

[illegible] herbs, heads pale yellow, clustered or in leafy spikes [illegible] herbs. Heads golden-yellow, [illegible] leafless clusters. [illegible] *G. luteo-album* [illegible]

G. indicum Linn. Sp. Pl. 853 (1753); FBI 3 289; Fl. Gujr. 1 46.

An erect [illegible] white-woolly polymorphic herb. Leaves [illegible] oblong or spathulate. Heads pale brown to [illegible] or [illegible] spikes or dense clusters. Achenes ovoid, minutely papillose.

A [illegible] weed during the winter months in fields and in [illegible] places. A form of this species often associated with *G. luteo-album* [illegible] Koster occurs along Jamuna Banks in moist sandy [illegible] much slender than the form found in other parts.

Local name : Buchbucha.

Flowers and Fruits : Dec.-April

J. K. Maheshwari 594, University Campus, 1009

G. luteo-album Linn. subsp. **affine** (D. Don) Koster in Blumea 4 484 1941.

G. affine D. Don, Prodr. Fl. Nepal. 173, 1825.

G. luteo-album var. *multiceps* Hook. f. in FBI 3 288, 1881.

A prostrate or ascending, white-woolly herb. Leaves 2.5-5 × 0.75 cm., oblong or subspathulate, half-amplexicaul. Heads golden-yellow, leafless, in dense, corymbose, shining clusters, heterogamous. Achenes brown, oblong, papillose.

Common along the banks of the Jamuna on silty moist or dry soils as well as near temporary ponds, often associated with other winter ephemerals.

Flowers and Fruits : Feb.-April

J. K. Maheshwari 910, banks of Jamuna River

16. **Blumea** DC. nom. cons.

Heads all solitary :
- Leaves dentate; pappus pink — *B. obliqua*
- Leaves serrate; pappus white — *B. bifoliata*

Heads many :
- Heads arranged in spiciform cymes or panicles
  - Florets yellow, plants turpentine-smelling — *B. lacera*
  - Florets purple, plants not giving smell of turpentine — *B. mollis*
- Heads arranged in broad, open or congested corymbs, florets yellow . . . . . *B. lacinata*

B. obliqua (Linn.) Druce in Rep. Bot. Exch. Club [illegible]
Erigeron obliquus L. in Mant. 313, 1771
Blumea amplectens DC. in Wt. Contrib. 13, 1834 ; FBI. 3 : 260, FUGP. 1 : 451.

A decumbent, woody, deep-rooted herb. Branches densely villous, ones often en[illegible]. Heads [illegible] Ray florets pinkish. [illegible] yellowish. Achenes hairy, oblong.

Common in dry waste places and fallow grounds.

Flowers and Fruits : Feb.-May
J. K. Maheshwari 922, Tirna [illegible]

B. obliqua Druce var. **pubiflora** (DC.) Maheshw. in JDNHS 54 : 905, [illegible]
B. pubiflora DC. Prodr. 5 : 434, 1834
B. amplectens DC. var. *pubiflora* (DC.) C.J. in FBI. 3 : 260, 1881

This variety occurs in sandy soils near Okhla. A stout villous herb. Long leaves densely villous. Florets pink. Heads larger than in the type.

Flowers and Fruits : March
J. K. Maheshwari 1047

B. bifoliata DC. in Wt. Contrib. 14, 1834 ; FBI. 3 : 261, FUGP. 1 : 452.

An erect, bushy, hairy herb, branching from base. Leaves serrate. Heads solitary, on long peduncles. Florets yellow. Achenes narrowly oblong, angular. Pappus white.

Occurs in waste places and fallow fields.

Flowers and Fruits : March-May

B. lacera (Burm. f.) DC. Prodr. 5 : 436, 1834 ; FBI. 3 : 263, FUGP. 1 : 453, Merr. Enum. 3 : 602.
Conyza lacera Burm. f. Fl. Ind. 180, 1768.

An erect, leafy herb. Leaves oval or obovate, dentate or serrate, not lobed. Heads in short, axillary cymes or terminal, spiciform panicles. Florets yellow. Achenes not ribbed, glabrate.

Occurs in shady places and along canal banks, gives a strong smell of turpentine.

Flowers and Fruits : Feb.-June

B. mollis (D. Don) Merr. in Philip. Jour. Sci. (Bot.) 5 : 395, 1910.
Erigeron mollis D. Don, Prodr. Fl. Nepal. 172, 1825.
Blumea wightiana DC. in Wt. Contrib. 14, 1834, FBI. 3 : 261, FUGP. 1 : 453.

An erect, villous, leafy herb. Leaves ovate, obovate or lanceolate, serrate. Heads many, in spiciform cymes or panicles. Flowers purplish. Achenes terete or angular, sparsely hairy.

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[illegible] fields and unused ground

[illegible] Feb-May

[illegible] 1834 FBI 3 261 FUGP 1 454

B. decoriata [illegible] Bong. in 1864 [illegible] & I [illegible]

[illegible]

[illegible] yellow [illegible]

[illegible] in waste places, unused ground and near small water [illegible] gardens.

Flowers and Fruits : March-May

17. Laggera Sch. Bip

L. aurita Sch.-Bip. ex C. Comp. Ind. 92, 1876, FBI 3 27, FUGP 1 457

A perennial, viscous, branched herb. Leaves sessile, shortly decurrent, dentate or subpinnatifid. Heads pink, about 1 × 1 cm., in terminal paniculate corymbs. Involucral bracts linear. Achenes hairy.

Common during the summer season in waste places, along roadsides, etc. becoming gregarious in some places.

Flowers and Fruits : June-July

J. K. Maheshwari 480, University Grounds

18. Pluchea Cass

P. lanceolata Cl. Comp. Ind. 94, 1876, FBI 3 272, FUGP 1 458
Parker For. Fl. 288

An erect, stout, hoary-pubescent, robust herb, 30-100 cm. tall. Leaves thick, coriaceous, ascending, 4-7 × 1-1.5 cm., oblong or oblanceolate. Heads pinkish or purpish, 8 × 4 mm., in compound corymbs longer than broad. Involucre many-seriate, outer bracts tinged with purple. Achenes minute.

A xerophytic plant. Common in sandy soils and often found on the slopes in gregarious patches. Very common near the village Gangatoli on Western Jamuna Canal. Eaten as fodder by the cattle.

Local name : Rukhri ; Bai surai

Flowers and Fruits : April-July

J. K. Maheshwari 162, Azadpur Road

19. Xanthium Linn

X. strumarium Linn. Sp. Pl. 987, 1753, FBI 3 303, FUGP 1 467

[illegible]

Local name. Bhangra ; Bichhu ; Gaurchota , Kuta , [illegible] chita ; Bhurat , Bhurchota

Flowers and Fruits : Sep [illegible]

J K Maheshwari [illegible] Alwar Road

20. Glossocardia Cass

G. bosvallea (Linn. f.) DC in Wt. Contrib. 19, 1834, Santapau Fl. Pres. Mad 709

Verbesina bosvallea Linn. f Suppl 379 [illegible]

Glossocardia linearifolia Cass. in Dict Sc Nat 19 62 1821, FBI 3 308 FUGP , 471

A small, prostrate or diffuse tufted annual. Leaves bipinnatisect segments narrowly linear. Heads small, yellow, heterogamous, about 8 5 mm Achenes densely bearded especially along the edges Awns spreading

Occurs in sandy and rocky tracts near Okhla and Faridabad

Flowers and Fruits : Aug.-Oct

J K Maheshwari 734 Okhla , 1237 Gurukul near Gurgaon

21. Eclipta Linn, nom. cons

E. prostrata (Linn) Linn Mant 286. 1771 , Santapau. Fl. Purandhar 68

Verbesina prostrata Linn. Sp. Pl. 902, 1753

Eclipta erecta Linn. Mant. 286, 1771 ; FUGP, 1 : 468

E. alba Hassk. Pl. Jav. Rar. 528, 1848 ; FBI 3 : 304

An erect or prostrate, rough annual. Leaves variable, 2 5-8X0 8-1 5 cm , linear or oblong-lanceolate turning black when dry Heads white, 7X9 mm , solitary or 2-3 together Achenes winged on the margin with warty excrescences. Pappus absent

Common in different types of habitats.

Flowers and Fruits : Throughout the year

J K Maheshwari 160, Shahdara

22. Bidens Linn

B. biternata (Lour) Merr & Sherff in Bot Gaz 88 293, 1929 Santapau in RBSI 16 (1) : 151, 1953

Cacalia hastata Linn. Fl. Cochinch. 308, 1790.
Bidens pilosa var. *minor* Linn.

An erect herb 30 cm. or more tall. Leaves variable, simple or [illegible] in the [illegible]. Heads white or yellow, corymbosely panicled, hetero[illegible]. Achenes 8 [illegible] mm. quadrangular, ribbed, glabrous, black. [illegible] Squamel.

Common in moist shady places of gardens and along the banks of small channels of Delhi Canal which passes through various parts of the district. It is troublesome at the time of fruiting when the [illegible] achenes adhere to the clothes.

Local name : Chirchita, Sui ka [illegible]
Flowers and Fruits : March-Nov.
J. K. Maheshwari 122, Roshanara Gardens ; 369, Old Delhi Ridge.

23. Blainvillea Cass.

B. latifolia (Linn. f.) DC. in Wt. Contrib. 17, 1834 & Prodr. 5 : 493, 1836.
Eclipta latifolia Linn. f. Suppl. 378, 1781.
Blainvillea rhomboidea Cass. in Dict. Sc. Nat. 29 : 493, 1823 ; FB. 3 : 305 ; FUGP 1 : [illegible]

An erect, dichotomously branched, scabrous-hairy, robust herb or undershrub. Leaves crenate-serrate, base cuneate. Florets white, heterogamous. Ray florets ligulate. Achenes triquetrous, curved. Disc florets tubular. Achenes nearly straight.

Found on the Ridge as well as in other parts near moist places or in the shades of shrubs and hedges. The fresh roots possess a faintly aromatic odour. Duthie in FUGP (loc. cit.) gives winter as the flowering period. At Delhi it flowers and fruits during the rainy season.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 920, Hauz Khas.

24. Viguieria H. B. & K.

V. helianthoides H. B. & K. Nov. Gen. & Sp. 4 : 226, t. 379, 1820.

A cultivated shrub. Leaves scabrous, turning blackish on drying. Flowers yellow, like single sunflowers, borne in corymbs. Ray florets fertile or more often sterile. Achenes usually pubescent.

Grown in gardens and hedges.

Flowers and Fruits : March-July.
J. K. Maheshwari 747.

25. Helianthus Linn.

H. tuberosus Linn. Sp. Pl. 905, 1753, Bailey, Man. Cult. Pl. 998.

An erect tuberous shrub. Leaves ovate to ovate-oblong, serrate, [illegible] Heads yellow.

Cultivated for its edible tubers which are produced on [illegible] and branches of underground parts. Australia [illegible] like [illegible] other

Local name : Hatipitch. English name : Jerusalem artichoke.

26. Tridax Linn.

T. procumbens Linn. Sp. Pl. 900. 1753. FBI. 3. 311. FLGP. [illegible] 4. [illegible] dentate or pinnatisect. Heads creamy or whitish, long-peduncled, [illegible] 1 x 1.5 cm. Achenes brown.

Abundant all over in waste places, along roadsides and in the crevices of old walls.

Flowers and Fruits : Dec.-May.
J. K. Maheshwari 157 ; 915, University Campus.

27. Verbesina Linn.

Leaves white-woolly beneath — *V. encelioides*
Leaves not white-woolly beneath — *V. oncophora*

V. encelioides (Cav.) Benth. & Hook. f. ex A. Gray in Bot. Calif. 1. 350. 1880.

Ximenesia encelioides Cav. Ic. 2 : 60, t. 178, 1793.

An erect, woolly, attractive perennial. Leaves distantly serrate or pinnatifidly lobed, 8-15 x 1.5-3 cm., white-woolly beneath, appressed hairy above. Heads golden-yellow, solitary, heterogamous, long-peduncled.

Native of Trop. America. Occurs along the canal banks of Hindan River, often gregarious amongst grasses.

Flowers : Aug.-Oct.
J. K. Maheshwari 1260 ; 1368.

V. oncophora Robins. & Seat. in Proc. Amer. Acad. 28. 109. 1893.

A shrub, 2-4 m. high. Leaves alternate, elliptic-oblong to oblong-ovate, serrulate. Heads numerous, cymosely paniculate.

Cultivated in the hedges of gardens as an ornamental shrub. Another species *V. gigantea* Jacq. is also grown in similar places.

Flowers and Fruits : Dec.-March.
J. K. Maheshwari 1198.

28. Cotula Linn.

C. hemisphaerica (Roxb.) Wall. ex Benth. & Hook. f. Gen. Pl. 2. 429. 1873. ; FBI. 3. 316. ; FLGP. 1. 476.

Argemone hemiphaeta Roxb. Fl. Ind. 3 : 437, 1832.

A small erect or diffuse annual. [illegible] Heads yellow, discoloured [illegible] breast. Heads [illegible] nom. A [illegible] angled.

A winter season, [illegible] here. [illegible] places.

Flowers and Fruits : Dec.-March.

J. K. Maheshwari 917, Shahdara.

29. **Artemisia** Linn.

A. scoparia Waldst. & Kit. Pl. Rar. Hung. 1 : 66, t. 65, 1802 ; Fl. [illegible] 1 : 123 ; FUGP. 1 : 477.

An erect, branched perennial herb, 1-1.8 m. tall. Stems [illegible] edged with purple. Leaves cut into filiform segments. Heads [illegible] 2-3 mm., heterogamous, greenish-yellow, arranged in a pyramidal [illegible] bracts shining. Achenes minute.

Common as a weed near Najafgarh village in the fields [illegible] crops, in waste places and along the bunds of fields on dumping [illegible] It is eaten by the cattle. The twigs are made into brooms [illegible] cleaning houses. Used as purgative.

Local name : Bano ; Barna.
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1280 ; 1321, Najafgarh.

30. **Echinops** Linn.

E. echinatus Roxb. Hort. Beng. 62, 1814, nom. nud. & Fl. Ind. 3 : 447, 1832 ; FBI. 3 : 358 ; FUGP. 1 : 480.

An erect or diffuse, much-branched, white-woolly annual. Leaves oblong, pinnatifid, the lobes ending in long, rigid, narrow spines. Heads umbellered, in compact, globose capitula. One or two bracts produced into sharp spines, exceeding the compound heads. Flowers pale blue. Achenes obconic, silky.

Common in waste, dry places and open ground.

Local name : Oontkatela.
Flowers : Jan.-June. Fruits : June.
J. K. Maheshwari 71, Najafgarh.

31. **Carthamus** Linn.

Heads yellow, plants wild. — *C. oxyacantha*
Heads orange-yellow, plants cultivated. — *C. tinctorius*

C. oxyacantha Bieb. Fl. Taur. Cauc. 2 : 283, 1808 ; FBI. 3 : 386.

A spiny perennial herb [illegible] with spines. Heads [illegible] Achenes [illegible]

An introduced [illegible] weed [illegible] Of [illegible] abundantly on [illegible] and [illegible] roadsides [illegible] waste places [illegible] It is believed that the seeds were brought [illegible] Delhi a few years ago by the *Pili Aandhi* (yellow [illegible] wind exhumes the seeds [illegible] the seeds germinate as the [illegible] warms up in April and May

Local name : Kateri ; Kateli ; Pohli [illegible]
Flowers and Fruits : May-June
J. K. Maheshwari 676, Najafgarh fallow fields

C. tinctorius Linn. Sp. Pl. 830, 1753 ; FBI 3 : 386 Merr. Enum. 3 : [illegible]

A glabrous shrub Leaves sp nose toothed Heads terminal, orange yellow. Achenes white, shining

Cultivated for its flowers which are used as a dye for clothes [illegible] achenes give an oil.

Local name : Kusum
Flowers and Fruits : March-May
J. K. Maheshwari 1167, University Gardens

32. Cirsium Adans

C. arvense (Linn.) Scop. Fl. Carn. 2 : 126, 1772.

Serratula arvensis Linn. Sp. Pl. 820, 1753

Cnicus arvensis Hoffm. Deutschl. Fl. (2) 130 1804 FBI 3 : 362 FUGP 1 : 481.

An erect, leafy herb, 0.6-1 m tall Leaves oblong, linear or obovate woolly beneath, margins tipped with spines. Flowers deep pink to pale purple Achenes small Pappus pale brown

Common in waste places, cultivated areas and along field edges

Local name : Kateli ; Katala ; Rissa
Flowers and Fruits : Feb.-April
J. K. Maheshwari 613, Uzirpur (Azadpur)

C. wallichii DC. Prodr. 6 : 643, 1837.

Cnicus wallichii Hook. f. in FBI 3 : 363 188[illegible], FUGP 1 : 481

Very rare see Mukherjee in JBNHS 51(2) 452, 1953] Differs from *C. arvense* Scop. in being taller (1.2-3 m) and in possessing bisexual, yellow flowers.

Flowers : Feb.-March

33. Cynara Linn

C. scolymus Linn. Sp. Pl. 827. 1753 ; Bailey, Man. Cult. Pl. 1 79

A tall thistle. Leaves pinnatifid, hardly spiny. Heads large. Receptacle enlarged, fleshy. Involucral bracts unarmed.

Cultivated as garden vegetable for its soft, fleshy receptacle of flower heads and thickened bases of involucral bracts. Available during the months of March and April. Grown from seeds or suckers.

Local name : Hatchuk ; English name : Globe artichoke.

34. Volutarella Cass.

V. ramosa (Roxb.) Santapau, Pl. Saur. 22, 1953

Carduus ramosus Roxb. Fl. Ind. 3 : 407, 1832

Volutarella divaricata Benth. & Hook. f. Gen. Pl. 2 : 476, 1873 in part ; FBI 3 : 383 ; FUGP 1 : 486

An erect or straggling, stiff, dichotomously branched annual. Stems white-tomentose, rough. Leaves variable, obovate to oblanceolate, usually pinnatifid-lobed. Heads 1.2-2.5 × 0.8-1.5 cm., ovoid, homogamous. Involucral bracts many-seriate, spinescent at tip. Flowers purplish. Achenes dull brown. Pappus brown, silvery.

Common in dry, waste places, comes up annually on the University Grounds. The young plants are used as fodder.

Local name : Rissa.
Flowers and Fruits : March-Aug. ; Winter.
J. K. Maheshwari 916, Chandrawal (near Timarpur).

35. Dicoma Cass.

D. tomentosa Cass. in Bull. Soc. Philom. 12, 1818 ; FBI 3 : 387 ; FUGP 1 : 487

Duthie (in FUGP 1 : 487) records this species from the Jamuna and Chambal Ravines in the districts of Agra, Delhi and Etawah. I have not seen the plant in the field.

An erect, much-branched herb. Stems white-woolly or finally glabrous. Leaves linear, densely white-tomentose. Heads many, solitary. Involucral bracts spinescent.

36. Hymenatherum Cass.

H. tenuifolium Cass. Dict. Sc. Nat. 22 : 314, 1821-1822 ; DC. Prodr. 5 : 642, 1834.

An annual, strong-smelling, erect herb, 15-20 cm. high. Stems simple or branched. Leaves deeply pinnatisect, 2-5 × 1-3 cm. ; lobes more or less filiform. Heads yellow, heterogamous, rayed, about 2 cm. in diam., terminal, showy. Involucres uniseriate. Achenes oblong, angled, black,

[illegible]

Native of Central America. Grown as an [illegible] and as border plant in garden beds but [illegible] near gardens and bungalows.

Flowers and Fruits : Oct.-April.

J. K. Maheshwari 911, Lodi Gardens.

56. Sphenocleaceae

Sphenoclea Gaertn.

S. zeylanica Gaertn. Fruct. 1 : 113, t. 24, 1788 ; FBI, 3 : 438, FUGP 2 : 499 ; Merr. Enum. 3 : 488.

A stout, amphibious herb, 30-90 cm. tall. Stems fistular. Leaves 5-7.5 × 0.7-1 cm. Spikes erect, cylindric. Flowers greenish-yellow, petals white. Capsules 3-4 mm. wedge shaped, enclosed by hyperpersistent calyx. Dehiscence circumscissile. Seeds minute, brown.

Rare. Found in swampy areas along the banks of canals. Occurs in the marshes of Najafgarh Drain on mud or submerged under water.

Local name : Mirchi ; Phulanghas.

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 436.

57. Plumbaginaceae

Plumbago Linn.

P. zeylanica Linn. Sp. Pl. 151, 1753 ; FBI, 3 : 480 ; FUGP 2 : 2 ; Parker For. Fl. 300, Merr. Enum. 3 : 275 ; Bor & Raiz. 162, F. 102.

A straggling or spreading shrub. Stems striate. Leaves thin, ovate, entire, 5-10 × 2.5-6 cm. Flowers white, in long, spicaform racemes. Calyx sticky, densely glandular, persistent. Capsules oblong.

Naturalized on the Ridge and adjacent hilly tracts, straggling amongst bushes of *Capparis sepiaria* Linn. Also found in waste places near gardens.

Local name : Chatawar ; Chirchitta ; Makkhi.

Flowers and Fruits : Sept.-Feb.

J. K. Maheshwari 511, Ridge ; 839, near Qutab.

58. Primulaceae

Anagallis Linn.

A. arvensis Linn. Sp. Pl. 148, 1753 ; FBI, 3 : 506 ; FUGP 2 : 6

[illegible]

[illegible] Leaves up to 4.5 [illegible] pedicels decurved in fruits. Stamens [illegible] about 5–6 mm [illegible]

[illegible]

Local name : Dhatak-dhak , Bachbacha
Flowers and Fruits : Dec.-April
J. K. [illegible] 498

49. Sapotaceae

[illegible] stamenodes none — *Madhuca*
[illegible] stamenodes present .
Petals 18–24, berries up to 1.5 cm. across, yellow or red [illegible] when ripe
Flowers normally tetramerous — *Mimusops*
Flowers normally trimerous — *Manilkara*
Petals 6, berries 4.5–5 cm. across, with thin, rusty-brown, scurfy skin — *Achras*

Madhuca J. F. Gmel.

M. indica J. F. Gmel. Syst. Nat. 2 : 799, 1791 ; Santapau in RBSI 16(1): 1953

Bassia latifolia Roxb. Pl. Cor. 1 : 20, t. 19, 1795 ; FBI. 3 : 544 ; FUGP 3 : 11

Madhuca latifolia (Roxb.) Macbride in Contr. Gray Herb. (n.s.) 53: 8, 1918

A large or medium-sized, deciduous tree. Bark dull black. Leaves clustered at the ends of branches, 15–25×9–12 cm., elliptic, obovate or broadly lanceolate, prominently nerved beneath. Flowers cream-coloured, peculiarly musty, sweet-scented, drooping, rusty-tomentose, in dense fascicles at the ends of leafless branches.

Planted along the roadsides and side-lanes of New Delhi. Also found in the fruit orchards. The fragrant, fleshy petals are eaten either raw or cooked, or made into sweet preparations.

Local name : Mahua ; Mohwa
Flowers : March-April
J. K. Maheshwari 1382, Gulab Bagh

Mimusops [illegible]

M. elengi [illegible]

[illegible]

Local name : Maulsari.
Flowers : March-July Fruits : Jan-Feb
J. K. Maheshwari 226, garden on Azadpur Road

Manilkara Adans

M. hexandra (Roxb.) Dub. in Ann. Mus. Col. Marseille [illegible] 915. Bor. Man. 1 [illegible] For. Bot. 2. =

Mimusops hexandra Roxb. Pl. Cor. 1 : 16 t. 15 (1795) & Fl. Ind. 238, FBI 3 : 549 ; FUGP 2 : 13

A small or medium-sized evergreen tree, forming a dense crown. Bark greyish-black or grey-white. Leaves 5-10 × 3-5 cm, obovate, oblong or elliptic, rounded or emarginate at tip, shining above. Flowers solitary or fasciculed. Berries ovoid, 1-seeded, about 1.5 × [illegible] cm.

Cultivated in gardens and fruit orchards for its edible fruits which are available in the market during summer. Common in the Mehrauli Gardens near Qutab.

Local name : Khirni
Flowers : Oct.-Dec. Fruits : Jan.-Feb.
J. K. Maheshwari 578, Qudsia Gardens 833, near Qutab 909, Rashtrapati Bhavan Campus

Achras Linn.

A. zapota Linn. Sp. Pl. 1190. 1753. Bailey Man. Cult. Pl. 790. Bor. Man. Ind. For. Bot. 233.

An evergreen, handsome tree. Leaves oblong-lanceolate or elliptic-oblong, 7.5-12.5 × 3-5.5 cm, crowded at ends of branchlets. Flowers white, long-peduncled. Fruits globose, with thin rusty brown epicarp, flesh yellowish-brown. Seeds large, shining black.

Cultivated in the Sarai Rohilla and Sabzimandi Gardens. Its palatable, sweet fruits which are sold in the market.

Diospyros Linn.

Leaves glabrous. fruits covered with a dense rusty scurf . . . . . *D. peregrina*

Leaves glabrescent. fruits glabrous :
Leaves 4-6 cm. long. male flowers in threes . . . . . *D. cordifolia*
Leaves 6-10 cm. long ; male flowers in small, few-flowered panicles . . . . . *D. montana*

D. peregrina (Gaertn.) Gürke in Engl. & Prantl Nat. Pflam. 4(1): 164, 1891; Benthall Trees Cal. 294

Embryopteris peregrina Gaertn. Fruct. 1: 145, t. 29, f. 2, 1788

Diospyros embryopteris Pers. Syn. 2: 624, 1807

A small, evergreen tree forming a compact shady crown near the ground. Young foliage reddish. Leaves 12-23 x 4-6 cm., ovate-oblong to oblong, coriaceous. Flowers unisexual, cream-coloured. Female flowers solitary, drooping. Calyx accrescent. Fruits 3-5 cm. across, almost globose, rust-coloured, yellow when ripe.

Introduced. A few trees have been planted in the campus of Rashtrapati Bhavan.

Local name : Kumbh
Flowers and Fruits : May-July
J. K. Maheshwari 685, Rashtrapati Bhavan Campus

D. cordifolia Roxb. Pl. Cor. 1: 38, t. 50, 1795 & Fl. Ind. 2: 538, 1832, FLGP 2: 17

D. montana Cl. in FBI. 3: 555, 1882, in part

A large shrub or small tree. Leaves ovate-oblong to ovate-lanceolate, cordate or rounded at base, subacuminate. Male flowers pale white, in buds on axillary cymes. Calyx persistent, enlarged in fruits, lobes reflexed. Fruits globose, yellow at maturity.

Probably planted, since it is commonly met in the hedges of fruit orchards, often along with *Capparis sepiaria* Linn., and *Argyreia retusa* Bull. Grows well on moist, sandy and clayey soils near canal banks. A few trees also occur on the New Delhi Ridge. The wood is used as fuel. The fruits are used in medicine.

Local name : Kendu
Flowers : Summer season. Fruits : Rainy season
J. K. Maheshwari 1004, New Delhi Ridge

W. montana Roxb. Pl. Cor. 1 : 37, t. 48. 1795 & Fl. Ind. [illegible] 15, Merr. Enum. 3 : 204.

A shrub or small tree. Leaves [illegible] flowers pale yellow [illegible] small few flowered [illegible] flowers pedicels enlarged in fruits reflexed [illegible] about 2.5 cm across.

Probably planted since it is commonly found [illegible] orchards, where it makes a nice fence along with [illegible] and *R. [illegible] reticulata* Batil. Grows well on [illegible] sandy [illegible] soils.

Local name : Basendu , Kendu
Flowers : Summer season

61. Oleaceae

Erect, scandent or climbing shrubs with simple or compound leaves flowers in terminal or axillary cymes ..... *Jasminum*
Trees with simple leaves flowers in axillary condensed panicles or fascicles ..... *Olea*

Jasminum Linn.

Flowers yellow ..... *J. humile*
Flowers white :
  Leaves unifoliolate
    Plants hairy ; calyx lobes short ..... *J. sambac*
    Plants very hairy ; calyx lobes very long ..... *J. multiflorum*
  Leaves 3- or more foliolate :
    Leaves with the two lower leaflets very small and frequently absent ..... *J. auriculatum*
    Leaves distinctly compound :
      Terminal leaflet much larger than others , laterals acute ..... *J. officinale*
      Terminal leaflet scarcely larger than the other , laterals usually very obtuse ..... *J. grandiflorum*

J. humile Linn. Sp. Pl. 7, 1753 , Bailey, Man. Cult. Pl. 798 , Bor & Ro 2 221, f. 131, Pl. 80.

An erect or diffuse, evergreen shrub. Leaflets 3-7, variable in shape ovate to linear, dark green above. Flowers bright yellow, fragrant in open clusters.

Grown as an ornamental in gardens and areas around bungalows for its fragrant blossoms.

Local name : Pili chameli
Flowers : Rainy season
J. K. Maheshwari 713

[illegible]

[illegible] fragrant flowers [illegible]

[illegible] Chameli Mogra

[illegible] Summer season

[illegible] 23 Andhra Gardens

J. multiflorum [illegible] Andh. Bot. Rep. 8 : 896 : 897. Merr. [illegible]

Nyctanthes multiflora Burm. f. Fl. Ind. 5, t. 3, f. 1, 1768.
Jasminum pubescens Willd. Sp. Pl. 1 : 37. 1797 ; FBI. 3 : 69. [illegible] & Raiz. 219, f. 129. Pl. 78

A scandent or diffuse densely pubescent shrub. Leaves simple, thick, cordate. Flowers white, [illegible] scented, [illegible] terminal many-flowered umbels. Calyx teeth 1 cm or more in length.

Grown commonly in gardens, lawns and hedges for its densely pubescent umbels of flowers. It is moderately hardy and gives a beautiful appearance to the landscape.

Local name : Safed chameli, Beli
Flowers : Cold season
J. K. Maheshwari 178, 538, University Campus

J. **auriculatum** Vahl, Symb. Bot. 3 : 1, 1794 ; FBI. 3 : 600

A bushy or climbing shrub. Leaves with 3 pairs of minute leaflets or simple. Flowers white, star-shaped.

Grown for its fragrant flowers.

Local name : Jooh.
Flowers : Rainy season
J. K. Maheshwari 1443

J. officinale Linn. Sp. Pl. 7 : 1753. Parker, For. Fl. 316, Bailey, Man. Cult. Pl. 798. Bor. & Raiz. 222, f. 132

A diffuse or climbing shrub, requiring support. Leaflets 5-7, elliptic, ovate or rhomboid-oblong. Flowers white, fragrant, in terminal cymes.

Native of Persia and Kashmir. Grown for its pretty leaves and fragrant flowers.

Local name : Motia
Flowers : Nov.-Dec.
J. K. Maheshwari 1212, University Campus

J. grandiflorum Linn. Sp. Pl. [illegible] Mor. [illegible]
For. Fl. 3, 7 ; Bor & Ra[illegible] [illegible]
A pretty shrub. Branche[illegible] Leaves [illegible] Leaflets 5-7, elliptic or ova[illegible] cuspidate. Flowers [illegible] fragrant.
Cultivated.

Local name : Chame[illegible]
Flowers : [illegible] seasons.

Olea Linn.

O. europaea Linn. Sp. Pl. 8, 1753. Bailey, Man. Cult. Pl. [illegible]
An erect small tree, rather weak, branching [illegible] black. Leaves 6-9 × 2.5-3.5 cm., elliptic, ovate, oblong, [illegible] tapering at ends, rusty yellow or coppery beneath, coriaceous. Flowers white, in axillary, condensed panicles or fascicles. Drupes ovoid.
Rare. A few trees have been planted in the campus of Rashtrapati Bhavan and Rajghat, where they flower and fruit annually.

Flowers : March-April. Fruits : May-June.
J. K. Maheshwari 695, 937.

62. Salvadoraceae

Salvadora Linn.

Leaves ovate to ovate-lanceolate, flowers pedicellate, ripe fruits red. *S. persica*
Leaves linear-lanceolate, flowers sessile, ripe fruits yellow. *S. oleoides*

S. persica Linn. Sp. Pl. 172, 1753 ; FBI. 3 : 619 ; FUGP. 2 : 28, Parker, For. Fl. 323.
A small or medium sized tree, crooked or bent. Bark dull grey or grey-white. Trunk deeply grooved, attaining a girth up to 1 m. Branchlets hanging. Leaves variable in shape, ovate, elliptic-ovate or ovate-lanceolate, 2.5-6.5 × 2-4 cm., pale green, glossy, fleshy. Flowers greenish-yellow, in axillary and terminal panicles. Drupes globose 3×3 mm., fleshy, dark red at maturity.
Occurs on the Ridge, becoming common at places. It has become gregarious, forming compact clumps in some areas along the uplands near Jamuna Banks in Old Delhi. Also planted. The crushed leaves emit a sweetish odour. The wood is used as fuel.

Local name : Pilu ; Khanjar.
Flowers : Jan.-April. Fruits : July.
J. K. Maheshwari 1286, Ridge.

[illegible] Jaeq. Ves. Bot. 140 t. 144. 1844. FBI. [illegible]

[illegible] Parkinson [illegible] Bot. [illegible]

[illegible] evergreen shrub [illegible] tree. Bark grey. [illegible] 2 cm. [illegible] leaves [illegible] lanceolate [illegible] 2 cm. [illegible] Drupes [illegible] green [illegible] [illegible] found in the Ridge as well as in [illegible] the Ridge [illegible] a [illegible] on [illegible] trees [illegible] the Grand Trunk Road [illegible] of Kandar area and between the Grand Trunk Road and [illegible] Road. The [illegible] is often attacked by a disease [illegible] pressed green crumpled mass which finally turns black. The [illegible] are sweetish and are eaten.

Local name : Pilu ; Jal
Flowers : March-May. Fruits : May-June
T. K. Maheshwari 1367 near Gurdwara (Jamuna Road)

63. Apocynaceae

Erect herbs or small shrubs
  Flowers solitary or paired, fruit a follicle, dehiscent — *Catharanthus*
  Flowers in cymes, fruit a drupe, indehiscent — *Rauvolfia*
Erect, diffuse or climbing shrubs and trees
  Habit climbing :
    Anthers exserted . . . . — *Vallaris*
    Anthers included
      Flowers as long as 10 cm. or more, bell-shaped . — *Beaumontia*
      Flowers not exceeding 2 cm., salverform :
        Flowers in lax, terminal or pseudoaxillary cymes — *Trachelospermum*
        Flowers in compact, trichotomous cymes — *Ichnocarpus*
  Habit erect or diffuse :
    Plants armed with spines . . . — *Carissa*
    Plants unarmed :
      Leaves alternate :
        Corolla funnel-shaped ; fruit indehiscent, a fleshy drupe . . . . — *Thevetia*
        Corolla salver-shaped ; fruit of 2, dehiscent follicles . — *Plumeria*
      Leaves opposite or whorled, corolla salver-shaped
        Leaves whorled :
          Trees ; flowers greenish-yellow . . . . — *Alstonia*
          Large shrubs ; flowers white, rosy or red . . — *Nerium*

[illegible]

Catharanthus G. Don

C. pusillus (Murr.) G. Don, Gen. Syst. 4: 95, 1836; Furnaw [illegible]

Vinca pusilla Murr. in Comm. Gotting. 3: 66, t. 2, f. 1, 17 [illegible]

Lochnera pusilla K. Schum. in Engl. & Prantl, Nat. Pflanz. [illegible] 1895; FTGP. 2: 34.

An erect, much-branched, pale green, glabrous herb. Stems [illegible] branches 4-angular. Leaves lanceolate, 4-7.5 × 1.5-2.2 cm. [illegible] white, solitary or paired. Corolla lobes unequal. F[illegible] near stomatolose, 4-5 × 0.2 cm. Seeds black, cylindric, [illegible] ribbed.

Common in and near fields of Jowar, Bajra and edible [illegible] and also in fallow fields on damp sandy soil. The local peasant says that the herb makes animals mad and causes eruptions in the neck.

Local name: Teanklo.
Flowers and Fruits: Aug.-Oct.
J. K. Maheshwari 334.

Rauvolfia Linn.

R. serpentina (Linn.) Benth. ex Kurz, For. Fl. Burma 2: 171, 1877; FB. 3: 632; FUGP. 2: 33; Parker, For. Fl. 328; Santapau in RBSI 16(1): 166, 1953.

Ophioxylon serpentinum Linn. Sp. Pl. 1043, 1753.

An erect, small shrub, branching from base, up to 0.75 m. tall. Stems lenticellate, pale-coloured. Leaves elliptic-lanceolate or obovate to oblanceolate, pale beneath, in whorls of 3, 17-20 × 4-6 cm. Flowers pink or rosy, in terminal or lateral, long-pedunceled cymes. Pedicels and calyces red. Corolla inflated near the middle. Drupes dark purple, about 0.8 × 0.8 cm., single or didymous.

Common in a semi-wild state in some of the Sabzimandi fruit orchards. The plant flowers and fruits annually and occurs as a shrubby undergrowth on moist or wet, sandy clayey soils of gardens where *Eriobotrya japonica* Lindl., *Prunus persica* Stokes, *Psidium guajava* L., and *Achras zapota* Linn. are grown. It becomes less common in January and February when the ground is dominated mainly by *Ageratum conyzoides* Linn. The local people make no use of this plant, except that the leaves are given as fodder.

[illegible]

Vallaris Burm.

V. solanacea (Roth) Kuntze Rev. Gen. 2: 417, 1891; [illegible] Hort. 284.

[illegible] on Roth, Nov. Pl. Sp. 137, 1821

[illegible] Spreng. Syst. 1: 639, 1824; FBI. 3: 650; [illegible] Bor & Raiz. 208, f. 123.

A [illegible] reading or straggling shrub. Leaves [illegible] Flowers cream-coloured, fragrant, [illegible] axillary, branched cymes. Corolla tube [illegible] cup-shaped limb [illegible] for ornamental purposes. In the lawns of Qutab [illegible] was observed as a straggling shrub, climbing upon itself or on other [illegible] creepers.

Flowers: March-Aug.
J. K. Maheshwari 644, Mughal Gardens.

Beaumontia Wall.

B. grandiflora Wall. Tent. Fl. Nepal. 15, t. 7, 1824; FBI. 3: 660; Santapau in RBSI 16(1): 168, 1953; Bor & Raiz. 206.

A woody, evergreen, climbing shrub. Leaves 10-20 × 7-10 cm, elliptic to obovate, abruptly acuminate. Flowers large, white, in terminal cymes, subtended by foliar bracts.

Native of Himalayas. Cultivated as a creeper on walls around bungalows and in gardens for its fragrant, showy flowers.

Flowers: March-April.
J. K. Maheshwari 640, Mughal Gardens.

Trachelospermum Lem.

T. jasminoides Lem. Jard. Fleur. 1: t. 61, 1851; Bailey, Man. Cult. Pl. 811; Bor & Raiz. 213, f. 126.

A evergreen climbing shrub. Leaves variable, 5-10 × 2.5-4 cm, elliptic-lanceolate to ovate-lanceolate, glossy above. Flowers white, in [illegible] axillary lax cymes. Follicles 2, terete.

Native of China. Cultivated as a creeper on walls or on the trellis in gardens for its sweet-scented, fragrant flowers.

Flowers: March-April. Fruits: Aug.-Oct.
J. K. Maheshwari 644, Mughal Gardens, 705

Ichnocarpus R. [illegible]

I. frutescens [illegible]

[illegible]

A [illegible] evergreen [illegible] white, somewhat [illegible] about [illegible] 4 mm. [illegible] anthers [illegible] nate.

Uncommon. Found as a climber in areas of moist [illegible] and dense vegetation ; collected from the hedges in Sa[illegible] and Roshanara Gardens.

Flowers : Winter season
J. K. Maheshwari 865, Sarai Rohilla Gardens

Carissa Linn. nom. cons.

Leaves 1.5-4 cm. long ; berries up to 0.7 cm. across ; plants wild or planted ... *C. spinarum*
Leaves 3.5-8 cm. long ; berries up to 1.3 cm. across ; plants cultivated ... *C. carandas*

C. spinarum Linn. Mant. 559, 1771 ; FBI 3 : 631 ; FUGP 2 : 32 ; Parker, For. Fl. 327.

A bushy, diffuse, evergreen shrub (rarely a small tree) with rigid spreading branches. Bark grey white. Thorns 1.5-5 cm. long, straight, simple or forked, divaricate. Leaves smaller than those of *C. carandas* Linn., 1.5-4 × 1.2-2 cm., broad ovate, elliptic or suborbicular. Flowers pure white, scented, in terminal and axillary corymbose cymes, fading towards reddish-brown. Berries dark purple at maturity, about 7-[illegible] mm.

Found on the Ridge in dry, stony places, alone or associated with *Capparis sepiaria* Linn. which it resembles in a xerophytic appearance. It is readily distinguishable from the latter in the field by its long straight thorns and fragrant, salver shaped flowers. The flowers are attacked by an insect in which case the corolla tubes become reddish outside and somewhat inflated. Also planted in the hedges of fruit orchards. It scents the air with its delicate fragrance.

Local name : Kikraunda ; Jangli karaunda
Flowers and Fruits : July-Dec. ; March-April
J. K. Maheshwari 502, Ridge

C. carandas Linn. Mant. 52, 1767 ; FBI 3 : 630 ; FUGP 2 : 31.

A variable, evergreen, diffuse shrub, erect, suberect or scandent.

[illegible]

Thevetia [illegible]

[illegible] (Pers.) Merr. in Philip. Jour. Sci. (Bot.) 9 : [illegible] Benthall, Trees Calc. 305

[illegible] Pers. Syn. 1 : 256, 1805

[illegible] Sp. P. 209, 1753

[illegible] Juss. ex Steud. Nom. 2 : 660, 1841 ; Bor & Ra[illegible] 193 : 194

An evergreen leafy shrub or small tree. Leaves linear, 10-15 × [illegible] cm., rose etc., dark green and polished above. Flowers yellow or orange fragrant. Drupes angular.

Introduced. Native of Trop. America. Common in gardens and around houses as a fencing plant.

Local name : Peela kaner ; English name : Yellow oleander
Flowers : Most part of the year
J. K. Maheshwari 377

Plumeria Linn.

P. rubra Linn. Sp. Pl. 209, 1753, Bailey, Man. Cult. Pl. 810

A small tree. Leaves obovate, up to 45 × 15 cm., prominently nerved beneath, marginal veins conspicuous. Flowers red, golden-yellow inside, very fragrant. Follicles 30 × 3.5 cm.

Planted in gardens.

Local name : Champa
Flowers : June-Sept.

P. rubra Linn. forma **acutifolia** (Poir.) Woodson in Ann. Mo. Bot. Gard. 25 : 2 : 1938 ; Benthall, Trees Calc. 304, Blatt. & Mil. Beaut. Ind. Tr. 2 : t. 24

P. acutifolia Poir. in Lamk. Encycl. Suppl. 2 : 667, 1811, FBI 3 : 641

Flowers from the above species in the possession of white or cream-coloured flowers usually with a yellow centre.

[illegible]

Alstonia R. Br. [illegible]

[illegible] [illegible]

[illegible]

A [illegible] evergreen [illegible] Bark [illegible] white [illegible] (K.N. 4.3.5.5) [illegible] white [illegible] pinkish [illegible] the end [illegible] green or yellow in compact umbellate cymes. [illegible] pendulous in flowers.

Planted in gardens and lawns. The latex of the plant is very [illegible] and is used as paste.

Flowers : Winter season. Fruits : March-June.

J. K. Maheshwari 629. Jamia Millia, Okhla Road [illegible] University Lawns.

Nerium Linn.

N. indicum Mill. Gard. Dict. n. 2, 1768 ; Merr. Enum. 3 : 336. Santapau in RBSI. 16(1) : 170, 1953.

N. oleandrum Soland. in Ait. Hort. Kew. 1 : 297. 1789. FBI. 3 : 655 ; FUGP. 2 : 40 ; Bor & Ranz. 199, f. 198.

N. oleander Blanco. Fl. Filip. 104, 1837 ; 75, 1845 ; 1 : 140, t. 47, 1877 (non Linn.)

A large evergreen, garden shrub. Leaves terniate, linear-lanceolate, dark green above. Flowers white, rosy or red, fragrant, in terminal cymes.

Commonly cultivated in the hedges of gardens. It thrives vigorously in the area and perfumes the air with its delicate scent.

Local name : Kaner ; Chandni.

Flowers : Summer season.

J. K. Maheshwari 54.

Tabernaemontana Linn.

T. divaricata (Linn.) R. Br. in Roem. & Schult. Syst. 4 : 437, 1819 ; Merr. in Contr. Arn. Arb. 8 : 140, 1934. Santapau in RBSI. 16(1) : 167, 1953.

Nerium divaricatum Linn. Sp. Pl. 209, 1753 (quoad syn. Fl. Zeyl. excl. syn. Hermann)

Tabernaemontana coronaria Willd. Enum. Hort. Berol. 235, 1809 ; FBI. 3 : 646.

[illegible] Stapf in This.-Dyer, Fl. Trop. Africa 4 [illegible]

[illegible] more in fulness. Leaves 7-14 [illegible] Flowers [illegible] Stipules [illegible] Follicles 2 5-5 [illegible] 1 5 [illegible] night, in few-flowered cymes [illegible] red beaks. Seeds embedded in a red, pulpy aril [illegible] Native of tropics. Commonly cultivated in gardens [illegible] as beautiful, glossy foliage and fragrant [illegible] profusely during the rains

Local name : Chamela : Chandni
Flowers : May-Oct. Fruits : Winter
J. K. Maheshwari 98, Roshanara Gardens

Holarrhena R. Br

H. antidysenterica (Linn.) Wall. Cat. 1672, 1829, nom. nud.; G. Don Gen. Syst. 4 : 78, 1837; FBI. 3 : 644; FUGP. 2 : 35; Parker, For. Fl. 329; Santapau in RBSI. 16(1) : 167, 1953

Nerium antidysentericum Linn. Sp. Pl. 209. 1753

A small deciduous tree 3-5 m. tall. Leaves opposite, broad ovate or elliptic. Flowers white, in terminal cymes. Follicles 2, very narrow 20-40 × 0·8 cm. Seeds with a tuft of hair.

Occurs on the Ridge. Easily confused with *Wrightia tinctoria* R. Br. from which it is distinguished by absence of corona and included anthers.

Local name : Kurchi
Flowers : May-June

Wrightia R.Br

W. tinctoria R. Br. in Mem. Wern. Soc. 1 : 73, 1810; FBI. 3 : 653; FUGP. 2 : 38; Parker, For. Fl. 330; Santapau in RBSI. 16(1) : 168, 1953

A large shrub to moderate-sized tree, branching from base. Bark greyish white. Leaves 6-13 × 4-8 cm., elliptic, elliptic-oblong or obovate. Young foliage soft and sticky beneath, mature ones coriaceous. Flowers white, scented, in lax, terminal, dichotomous cymes. Corona of numerous scales. Follicles deep green, 12-30 × 1 cm., pendent, joined. Seeds linear; coma basal.

A characteristic tree of the Ridge where it is common especially in depressed areas. On Old Delhi Ridge near Hindu Rao Hospital it is seen to grow abundantly producing a denser patch of trees. Easily recognizable by its greenish-yellow leaves, white flowers with coronary scales and long, pendent follicles.

Flowers : May-Sept. Fruits : Greater part of the year
J. K. Maheshwari 201, 519, Old Delhi Ridge

[illegible] free [illegible]
[illegible]
Anthers with a membranous appendage [illegible]
[illegible] erect
Habit climbing
[illegible] leaves [illegible] *Periploca*
Leaves narrow; flowers white or pink [illegible] rather showy
Leaves broad
Corolla salver-shaped; flowers pale yellow
Corolla rotate
Pollinia pendulous from the corpuscle, [illegible] divided nearly to the base . . . . . *Pentatropis*
Pollinia erect on the corpuscle
Coronary filaments stellately spreading, fleshy; pollinia oblong . . . . . *Dregea*
Coronary filaments rounded or depressed; pollinia globose. . . . . *Tylophora*
Anthers without a membranous tip:
Corolla tube more or less elongate and often inflated at the base
Leafless, erect shrubs . . . . . *Orthanthera*
Leafy twiners or climbers
Herbs; flowers violet-purple . . . . . *Ceropegia*
Shrubs, flowers white, waxy . . . . . *Stephanotis*
Corolla tube short, limb rotate . . . . . *Leptadenia*

Cryptostegia R. Br.

C. grandiflora R. Br. in Bot. Reg. t. 435 (1819); FBI. 4. 6; Merr. Enum. 3: 340; Parker, For. Fl. 341.

A large, straggling or climbing shrub or liana. Leaves elliptic or oblong, glossy. Flowers large, pale purple or rosy, showy. Follicles woody, 2-winged.

Naturalized on the Ridge, growing as a liana, or the branches twining among themselves. The plant received attention as a possible valuable source of vegetable rubber. Common in the sandy beds near Okhla where a plantation, said to be more than 25 years old, was established on the right bank of the river and attempts were made to produce rubber, hence its local name. Also planted in other parts.

Local name: Rabar ki bel, Aaksan, Chabuk-chari.
Flowers: June-Sept.
J. K. Maheshwari 213

Calotropis R. Br.

C. procera [illegible] Kew 2 [illegible] 18 FBI 4 [illegible]

[illegible]

[illegible] or decumbent [illegible] Young [illegible] Flowers white-blooms [illegible] strong-smelling [illegible] terminal and [illegible] pale-yellow [illegible] Follicles recurved [illegible] Seeds [illegible] white coma.

Common in open waste, sandy, dry places. The leaves and [illegible] are used in various body troubles. The coal from the roots is used [illegible] toothache. The leaves are commonly infected by *Cercospora* [illegible]

Local name : Ak; Akra ; Ankta ; Madar
Flowers and Fruits : March-July
J. K. Maheshwari 24, Najafgarh

Pergularia Linn.

P. daemia (Forsk.) Blatt. & McC. in JBNHS. 36(3) 528, 1933.

Asclepias daemia Forsk. Fl. Aegypt.-Arab. 51, 1775.

Pergularia extensa N. E. Br. in Dyer Fl. Cap. 4(1) 758, 1908.

Daemia extensa R. Br. in Mem. Wern. Soc. 1 50, 1810, FBI 4 20.

A perennial, bad-smelling, hispid climber. Leaves subsucculent broad ovate, acuminate, deep cordate, 5-10 × 4.5-7 cm. Flowers yellowish-green or greenish-white, tinged with pink at base. Follicles curved backwards, softly spiny, 5-8 × 1.5 cm.

Abundant on the Ridge during monsoon months when it twines and spreads upon the trees and shrubs or spreads on the ground. Also found in other parts twining on telegraph wires and other supports.

Local name : Aaksan
Flowers : March-Sept. Fruits : March-Oct.
J. K. Maheshwari 393

Oxystelma R. Br.

O. secamone (Linn.) K. Schum. in Engl. & Prantl, Nat. Pflam. 4 (2) 229, 1895.

Periploca secamone Linn. Mant. 216, 1771.

Oxystelma esculentum R. Br. in Mem. Wern. Soc. 1 40, 1810, FBI 4 17.

A glabrous twiner. Leaves thin, narrowly lanceolate, usually 10 × 0.4 cm. Flowers whitish with purple. Follicles glabrous, 5-6 cm long, ovoid-lanceolate, pointed.

Common near Okhla on sandy, alkaline soils, where it twines on *Tamarix* spp.

[illegible]

[illegible]

Telosma [illegible]

T. pallida (R[illegible]

[illegible]

[illegible]

A [illegible] shrub. Leaves [illegible] umbel form [illegible] deeply grooved on the de[illegible]

Occurs on the Ridge and adjacent dry tracts near M[illegible] [illegible] her, [illegible] spreading and twining upon [illegible] Also cultivated along the trellis for its foliage.

Flowers : July-Sept. Fruits : Sept.-March.

J. K. Maheshwari 820 : near Guruku (Faridabad), [illegible] Azadpur Road : 874.

Pentatropis R. Br.

P. spiralis (Forsk.) Decne. in Ann. Sc. Nat. (ser. 3) 9 : 328. 1838 ; F.B.I. 4 : 19 ; Parker, For. Fl. 343.

Asclepias spiralis Forsk. Fl. Aegypt.-Arab. 49. 1775.

Pentatropis cynanchoides R. Br. in Salt Voy. Abyss. Append. 64 (1814) ; FUGP 2 : 52.

A slender, twining shrub. Leaves ovate-lanceolate, cordate, smooth, 2.5-5 × 1-2 cm. Flowers greenish-yellow or pale yellow, pendent in umbelliform cymes. Buds 5-cornered at base. Follicles glabrous, lanceolate.

Occurs on the Ridge as well as in other parts, either twining upon the trees and thorny shrubs or spreading and twining upon itself.

Flowers : July-Sept.

J. K. Maheshwari 718 ; 873, Okhla.

Dregea E. Mey. nom. cons.

D. volubilis Benth. ex Hook. f. in F.B.I. 4 : 46. 1883 ; Parker, For. Fl. 349.

Marsdenia volubilis Cooke, Fl. Pres. Bomb. 2 : 166. 1904.

A stout, woody, hoary-pubescent twiner. Branches rather densely lenticellate. Leaves 7.5-15 × 6.5-11 cm., broad ovate to suborbicular, cordate or rounded, acuminate. Flowers green, in dense, drooping umbels which are sometimes several together. Follicles paired, divaricate, tapering from base, 8-10 × 4 cm.

Rare. Met as a climber on trees or in absence of a support lies prostrate on the ground. Collected from a tree growing along the road to Azadpur.

Flowers April-June. Fr. is Aug.-Oct.

J. K. Maheshwari, VN. ASI, Gurmandi (Azadpur Road).

Tylophora R. Br.

T. indica (Burm. f.) Merr. in Philip. Jour. Sci. (Bot.), 19: 473. 1921.

Santapau in RASI. 16(1): 174. 1953.

Cynanchum indicum Burm. f. Fl. Ind. 70, 1768.

Asclepias urbanetia Linn. f. Suppl. 171. 1781.

Tylophora urbanetia Wt. & Arn. in Wt. Contrib. 51, 1834; FBI. 4: 44.

This species is included here on authority of M. B. Raizada (*see* Ind. For. 76: 492, 1950) who recorded its occurrence from Delhi on the basis of a plant collected by W. R. Mustoe in 1924.

A climber with long, fleshy roots. Leaves ovate, rounded or oblong, coriaceous, pubescent or tomentose. Flowers dull yellow and purple within, in few or many-flowered umbels. Follicles very variable, divaricate.

Orthanthera Wt.

O. viminea Wt. & Arn. in Wt. Contrib. 48, 1834; FBI. 4: 64; FUGP 2: 65; Parker, For. Fl. 352.

Although this plant has not been observed wild in the field, I have learnt from local people that it grows commonly at a place called 'Phandkargar Sahar ki Thali' situated near villages Bijwasan and Ghadi on Delhi to Rewari railway line. It is said that a small group of natives use the fibre of the stem in making ropes and sell their products in the market.

A small, erect, leafless shrub with stiff, glabrous branches. Flowers dull brown, in compact, woolly cymes. Corolla salver-shaped. Follicles solitary, erect, linear.

Common about Delhi (*see* Stewart, Punj. Pl. 146, 1869 & Duthie, Fl. GP. 2: 65, 1911).

Local name: Khip.

Ceropegia Linn.

C. bulbosa Roxb. Pl. Cor. 1: 11, t. 7, 1795 & Fl. Ind. 2: 28; FBI. 4: 67; FUGP. 2: 66.

A twining, slender herb. Leaves very variable, up to 5 × 1.5 cm. Flowers violet-purple, few in peduncled umbellate cymes. Corolla tube inflated at the base.

Rare in the R[illegible]

Flowers and Fruits [illegible] season

J. K. Maheshwari 1446, New Delhi [illegible]

Stephanotis [illegible]

S. floribunda Brongn. in Ann. Sc. Nat. [illegible]

Climbing glabrous shrub [illegible] broad ovate, coriaceous [illegible] cymes [illegible]

Native of Madagascar. Grown in gardens for [illegible] and waxy-white fragrant flowers.

Flowers: Summer and rainy seasons.

Leptadenia R. Br.

Leafy, twining shrubs [illegible]

Almost leafless, erect shrubs [illegible] *L. pyrotechnica*

L. reticulata Wt. & Arn. in Wt. Contrib. 47. 1834; FBI. 4. 63; FH. GP. 2 : 63.

A diffuse, much-branched, robust climber. Leaves [illegible] ovate, cordate, coriaceous. Cymes lateral or subaxillary, umbellaform, many-flowered. Flowers pale yellow. Follicles usually solitary, straight, hard, smooth, with a thick curved beak.

Common in hedges and shrubberies of gardens, also around telegraph poles and wires.

Flowers : Rainy season. Fruits : Winter

J. K. Maheshwari 850, University Campus

L. pyrotechnica (Forsk.) Decne. in Ann. Sc. Nat. (ser. 2) 9. 269. 1838; Blatt. in JBNHS. 36 : 533. 1933.

Cynanchum pyrotechnicum Forsk. Fl. Aegypt. Arab. 53. 1775.

Leptadenia spartium Wt. Contrib. 48. 1834; FBI. 4. 64; FH. GP. 2 : 63.

An erect, glabrous, much-branched, almost leafless shrub, about 1.5 m. high. Leaves few, often unequal, usually on young shoots only. Flowers yellow in lateral cymes. Follicles terete, beak long, slender.

A few plants occur near Suraj Kund (Gurukul, Faridabad) and in the vegetative condition appear like *Ephedra*. Also found on the unused grounds inside Lodi Gardens.

Flowers : June-Sept.

J. K. Maheshwari 723, near Gurukul (Faridabad)

[illegible] Flowers [illegible]

Buddleja Linn.

The correct spelling of this genus has been taken [illegible] Kew Bull. 1949, 19[illegible]

[illegible] Leaves lanceolate. Flowers white. *B.* [illegible]

[illegible] Leaves ovate. Flowers violet. *B.* [illegible]

[illegible] Leaves ovate-oblong. Flowers orange. *B. madagascariensis*

B. asiatica Lour. Fl. Cochinch. 72, 1790; Parker, For. Fl. 354; Mrs. Fnum. 3. 316; Bailey, Man. Cult. Pl. 804.

A large shrub. Young branches with white or buff-coloured [illegible] tum. Leaves 10-20 × 2.5-4 cm., lanceolate, acuminate, [illegible] neath. Flowers white, deliciously fragrant, in slender drooping panicles.

Grown commonly in hedges, shrubberies and gardens for its fragrant blooms.

Flowers and Fruits: Feb.-June.

J. K. Maheshwari 89

B. lindleyana Fort. in Lindl. Bot. Reg. 25, 1844; Bailey, Man. Cult. Pl. [illegible].

A large shrub. Leaves ovate, pale yellow beneath, dark green above. Flowers purplish-violet, in dense, erect, long spikes. Corolla granular pubescent outside.

Grown in the shrubberies of gardens.

Flowers: July-Sept.

J. K. Maheshwari 246

B. madagascariensis Lamk. Encycl. 1. 513, 1785; Parker, For. Fl. 355; Bailey, Man. Cult. Pl. 804.

A shrub. Leaves ovate-oblong, deep green above. Flowers orange, in terminal panicles.

Grown in the shrubberies for its flowers.

Flowers: Jan.-March.

J. K. Maheshwari 758

Nicodemia Tenore

N. diversifolia Tenore. Cat. Ort. Napol. 88, 1845; Parker, For. Fl. 355.

A straggling shrub with woody branches. Leaves round-ovate or suborbicular, gibbous, usually lobed in the upper part. Inflorescence rusty-tomentose. Flowers yellow, dull-looking, in compound axillary and terminal umbels.

Grown in gardens as hedge

Flowers [illegible]

J. K. Maheshwari [illegible] Botanic Gardens

66. Gentianaceae

Terrestrial herbs

Flowers white [illegible]

Flowers [illegible] pink [illegible]

Aquatic herbs [illegible]

Pleurostema Bl. nom. cons.

E. verticillatum (Linn.) Engl. Pflanzenw. Ost.-Afr. C. 3:3, 1895; [illegible] & Franz. Nat. Pflan. 4: 67, f. 31.

Gentiana verticillata Linn. Syst. 953, 1759.

Enicostema littorale Bl. Bijdr. 848, 1826; FBI. 4: 101; FLGP. 2: 73.

An erect or procumbent glabrous herb, 0.25 cm. tall. Leaves decussate, 2.5-6 × 0.5-1 cm., ovate-lanceolate to linear. Flowers white in whorled clusters, usually 3 in the axil. Stigmas large, bi-lobed. Capsules subglobose, about 6 × 4 mm. Seeds minute, brown, [illegible].

Uncommon. Found in small patches here and there, [illegible] from the lawns of University Campus on moist, sandy places and slippy crevices. Also met in the hilly tracts.

Flowers and Fruits : June-Sept.

J. K. Maheshwari 381

Centaurium Hill

C. ramosissimum Druce in Rep. Bot. Exch. Club Brit. Isles, 1915, 4: 274, 1916.

Erythraea ramosissima Pers. Syn. 1: 283, 1805; FBI. 4: 101; FLGP. 2: 74.

An erect, glabrous, elegant herb, 5-10 cm. tall. Leaves decussate, ascending, 1.2-5 × 0.8-1.5 cm., closely leafy, variable in shape. Flowers rosy, sometimes dull white, in conspicuously bracteate, axillary and terminal, dichotomous cymes forming a lax head. Capsules as long as or longer than the calyx, many-seeded. Seeds minute, ovoid, black, reticulate.

Grows on moist, sandy and silty soils of Jamuna Banks. In the months of April and May 1955, I saw the plant growing in abundance along Jamuna Banks. Also common near village Gheora in waste places along railway lines. Occasionally it is met with in the fields of Delhi and lawns of University Campus. The rosy flowers are extremely attractive and may be used for gardening.

[illegible] Rainy [illegible]
Flowers and [illegible] Feb. May
J. K. Maheshwari 6, 4

Nymphoides [illegible]

N. cristatum Roxb. ex Kunze, Rev. Gen. 429, 1891.
Menyanthes [illegible] Roxb. Pl. Cor. 2 : 3, t. 105, 1799.
Limnanthemum [illegible] *cristatum* Griseb. Gen. & Sp. Gent. 342, 1839. FBI 4 : 131; FUGP 2 : 79.

An aquatic floating herb, spreading by runners. Leaves 4-8 [illegible] reniform, deep cordate, purplish beneath. Flowers white, [illegible] in clusters at the base of petiole. Corolla lobes with a white [illegible] crest down the middle and a tuft of white hairs round the throat. [illegible] common in the temporary ponds near Shahdara. Grown in the fresh water ponds and tanks.

Flowers : Summer and rainy seasons.
J. K. Maheshwari 242, 1125.

67. Hydrophyllaceae

Hydrolea Linn. nom. cons.

H. zeylanica (Linn.) Vahl, Symb. Bot. 2 : 46, 1791; FBI 4 : 133; FUGP 2 : 80; Santapau in RBSI. 16(1) : 184, 1953.
Nama zeylanica Linn. Sp. Pl. 226, 1753.

An erect, annual herb. Leaves lanceolate, narrowed at ends, membranous. Flowers blue, in short, terminal racemes. Bracts four. Calyx glandular-pubescent. Capsules small, enclosed in the calyx.

A weed in paddy fields on moist or wet ground, collected once on 4-10-1953 in a rice field on moist situations.

Flowers : Sept.-Oct.
J. K. Maheshwari 499, Najafgarh.

68. Boraginaceae

Ovary entire or slightly 4-lobed, style terminal, herbs or undershrubs. Styles 2, drupes of 4, 1-seeded pyrenes, prostrate herbs. *Coldenia*

Style elongated, dilated above in a ring, drupes of 4, 1-seeded pyrenes, herbs or undershrubs. *Heliotropium*

Ovary deeply 4-lobed, fruits usually of 4 nutlets; herbs. *Trichodesma*

Anthers connivent in a cone, connectives much produced and twisted together at the apex; herbs.

[illegible]

Coldenia Linn

C. procumbens Linn. Sp. Pl. 125, 1753; FBI 4: 144; [illegible] Santapau in RBSI 16(1): 185, 195

A procumbent deep-rooted hairy herb with [illegible] lying flat on the ground. Leaves 2.5-4 × 1-1.5 cm, [illegible] oblong, coarsely serrate or subpinnatifid. Flowers white, small, axillary. Drupes pyram[illegible] 4-celled separating at 4 [illegible] during the summer months in the dried canal of Najafgarh where it spreads in abundance along with *Heliotropium supinum*, *Chrozophora parvifolia* Klotz., *Glinus lotoides* Linn., and others [illegible] the ground.

Flowers and Fruits: May-June.
J. K. Maheshwari 675, dried up canal of Najafgarh.

Heliotropium Linn.

Calyx broader than the corolla, sepals broad, enclosing the fruit. Prostrate, villous annuals . . . . . *H. supinum*
Calyx narrow, sepals narrow, not enclosing the fruit.
Corolla lobes acuminate. A woody, hispid herb or undershrub *H. subulatum*
Corolla lobes not acuminate.
An erect herb, branching from a woody base; leaves broader elliptic to obovate . . . . . *H. eichwaldi*
A small, procumbent herb; leaves narrow, linear *H. strigosum*

H. supinum Linn. Sp. Pl. 130, 1753; FBI 4: 149; FLGP 2: 91; Santapau in RBSI 16(1): 186, 1953.

A prostrate or decumbent, villous herb. Leaves 1.25-2.5 × 1-1.5 cm, elliptic, ovate or suborbicular, plicate. Flowers white, sessile in simple or forked, short spikes. Fruits ovate to subglobose. Nutlets 2-4, enclosed by the persistent calyx.

Grows commonly on dry, hard, clayey soil in the bed of Najafgarh Drain in association with *Coldenia procumbens* Linn., *Glinus lotoides* Linn., *Chrozophora parvifolia* Klotz., and others.

Flowers and Fruits: May-June.
J. K. Maheshwari 674.

H. subulatum Hochst. ex DC. Prodr. 9 : 535. 1845 ; FBI 4 : 148 ; FUGP 2 : 91 ; Wt. Ic. t. 842.

H. [illegible] [illegible] in FBI 4 : 148 [illegible]

A woody, hispid herb or undershrub. [illegible] the ground, much branched. Leaves 2.5-6 × 0.5- [illegible] ovate. Flowers greenish yellow, in elongated [illegible] Corolla lobes [illegible] spreading. [illegible] tube [illegible] the [illegible]

Common in some spots on rocky tracts, mainly on the Ridge.

Flowers and Fruits : Aug.-April.

J. K. Maheshwari 635, Old Delhi Ridge ; 724, near [illegible] Fa[illegible] dabad.

H. eichwaldi Steud. ex DC. Prodr. 9 : 535. 1845 ; FBI 4 : 149 ; FUGP 2 : 92.

An erect, rough, woolly-tomentose herb, branching from a woody base. Leaves 2.5-6 × 2-3.5 cm., elliptic-oblong or obovate, glabrescent. Flowers white, paired, in short, ebracteate spikes, hispid [illegible] the apex when young. Nutlets 4, ellipsoid, round at ends, minutely verrucose.

Common in waste places, gardens and fields in dry sandy or sandy clayey soils. A medicinal herb.

Local name : Kadhera ; Kamoda ; Karera.
Flowers and Fruits : March-June.
J. K. Maheshwari 50, Timarpur ; 871, University Campus.

H. strigosum Willd. Sp. Pl. 1 : 743. 1798 ; FBI 4 : 151 ; FUGP 2 : 93 ; Merr. Enum. 3 : 378.

A prostrate or often procumbent, much branched, perennial, deep-rooted herb. Leaves 0.8-2 × 0.15-0.3 cm., linear. Flowers white. Calyx accrescent. Fruits globose, of 4 nutlets.

Common in different situations ranging from a dry crevice to a moist shady place. A paste of the herb is used for treatment of wounds between the finger bases.

Local name : Panachuni ; Jhunkdi.
Flowers and Fruits : During and after rains.
J. K. Maheshwari 150, Okhla.

Trichodesma R. Br. nom. cons.

T. amplexicaule Roth, Nov. Pl. Sp. 104. 1821 ; FBI 4 : 153 ; Santapau in RBSI, 16 (ed. 2) : 147, 1950.

T. indicum L. var. *amplexicaule* Cooke, Fl. Pres. Bom. 2 : 2.5. 1904.

An erect or diffuse, hispid herb with a long tap root and bulbous-based stiff hairs. Leaves 4-7 × 1.5-2.5 cm., ovate, elliptic or lanceolate, cordate or semi-amplexicaul. Flowers blue or violet, solitary, in leaf-opposed or extra-axillary, leafy racemes. Corolla funnel-shaped. Nutlets [illegible] pushed on the back.

Common on the Ridge as a weed [illegible] and along roadsides during the monsoon period.

Flowers and Fruits : After rains.

J. K. Maheshwari 375, Delhi Ridge.

Cynoglossum Linn.

C. lanceolatum Forsk. [illegible] Fl. Aegypt.-Arab. [illegible] 156; FUGP 2: 96; [illegible]

An erect, hispid herb [illegible] Rosettes [illegible] 12-30 cm [illegible] sandy-clayey soils.

A weed occurring as an undergrowth in the fruit orchard [illegible] sandy-clayey soils.

Flowers and Fruits : Aug.-Sept.

J. K. Maheshwari 407, Azadpur Gardens.

Arnebia Forsk.

A. hispidissima (Lehm.) DC. Prodr. 10 : 94, 1846; FBI 4: 176; FUGP 2: 97.

Lithospermum hispidissimum Lehm. Icon. Nov. Stirp. 1: 39, 1827.

A diffuse or prostrate, very hispid herb. Tap root red. Leaves 30-60 x 4-6 mm., lanceolate to linear-lanceolate. Flowers yellow or yellowish-white, in secund hirsute spikes. Nutlets ovoid-conic, acute tuberculate. The plants are dimorphic with long- and short-styled flowers.

A xerophytic herb found in dry sandy or sandy-clayey soils. The red tap roots are used for colouring hair oils.

Local name : Ratanjot.

Flowers and Fruits : Oct. and April.

J. K. Maheshwari 733, Lodi Gardens.

69. Ehretiaceae

Style terminal, 4-fid ; trees	*Cordia*
Style 2-fid ; trees or shrubs	*Ehretia*

Cordia Linn.

Leaves alternate, broad ovate, elliptic to suborbicular, with basal nerves — *C. dichotoma*

Leaves subopposite, oblong to oblanceolate, with no distinct, basal nerves — *C. rothii*

C. dichotoma Forst. f. Prodr. 18, 1786; Merr. Enum. 3: 373; Santapau in RBSF 16(1): 185, 1953.

[illegible] Wight Phytogr. 4 : 4 : 1794 ; FBI. 4 : 137 [illegible]

[illegible]

A [illegible] medium-sized, [illegible] tree. [illegible] leaves [illegible] and [illegible] Drupes [illegible] cm. [illegible]

Wild on the Ridge and found in waste places around villages. A [illegible] plant in gardens and shrubberies for its medicinal fruits which are [illegible] raw or pickled.

Local name : Lasoora, Lasaura
Flowers : Jan.-April. Fruits : May-July
J. K. Maheshwari 702, University Campus ; 1074, Ridge

E. [illegible] Roem. & Schult. Syst. 4 : 798. 1819 ; FBI. 4 : 138 ; FUGP [illegible] : 45 ; Parker For. Fl. 158.

An erect or crooked tree, branching from base. Bark grey-white to dull black, peeling off in longitudinal flakes. Leaves oblong to oblanceolate, 5-12 × 3 cm., scabrous, pendent. Flowers white, in lax terminal or axillary cymes. Drupes ovoid, reddish-brown when ripe.

Wild on the Ridge and adjacent hilly tracts on gravelly stony soil, often bent. Common on New Delhi Ridge. Fruits are edible and usually sold in the market. The pulp is not so viscid as in *C. dichotoma* Forst. f.

Local name : Gondi ; Gondni
Flowers : April-June. Fruits : Cold season
J. K. Maheshwari 832, near Qutab

Ehretia Linn.

Leaves serrate . . . . . *E. acuminata*
Leaves entire :
Small trees ; leaves ovate to elliptic, glabrous beneath . . . *E. laevis*
Shrubs ; leaves usually obovate or spathulate, pubescent beneath . . . *E. aspera*

E. acuminata R. Br. Prodr. 497. 1810 ; FBI. 4 : 141 ; FUGP 2 : 86 ; Merr. Enum. 3 : 374.

A moderate-sized, deciduous tree, branching from above the ground. Bark grey. Leaves 8-13 × 3.5-5 cm., elliptic or ovate-oblong, sharply serrate. Flowers white, in fascicles, forming large, dense, compound panicles. Drupes 6 × 5 mm. across, orange-coloured.

A handsome tree when in full bloom. Some trees have been planted in the campus of Rashtrapati Bhavan where they flower and fruit annually.

Flowers : March-April. Fruits : June-July
J. K. Maheshwari 938 ; 1144

E. [illegible] R. [illegible] Pl. Cor. I. 42, t. 56, 1796. [illegible] 4. 141. [illegible]
[illegible] Parano. For. I. 366.

A small [illegible] tree with [illegible] branches. [illegible] Leaves [illegible] or [illegible], 0.5-12.5 × [illegible] cm. Flowers white, in [illegible] of [illegible] unilateral spikes or racemes. Drupes orange at first, [illegible] when dry, 6-8 mm across.

Common on the Ridge, where it shows irregular flowering. A planted in the village shrubberies and along roadsides. The young twigs are used as fodder.

Local name: Pupri, Desi pupr.
Flowers: June; Dec.-March. Fruits: June-July.
J. K. Maheshwari 867.

E. aspera Willd. Phytogr. 4, t. 2, f. 1, 1794; FUGP 2: 8.

A shrub with short, terete, glabrous branches, downy when young. Bark greenish or greyish white. Leaves variable, elliptic, obovate or spatulate, scabrous and shortly hairy above, persistently hairy beneath. Flowers white, in dense, corymbose cymes, becoming paniculately at later.

Occurs on the Ridge as a short, woody, spreading or diffuse shrub amongst gravel and stones.

Flowers: June-Aug.
J. K. Maheshwari 1104, Ridge.

70. Convolvulaceae

Flowers numerous, in large panicles; capsules 1-seeded, indehiscent ..... *Porana*

Flowers solitary or in cymes; capsules valvular or operculate

- Styles 2 or 2-fid
  - Flowers white, solitary or passing into terminal clusters in upper axils; styles 2 ..... *Cressa*
  - Flowers blue, solitary or in few-flowered cymes, styles 2, each 2-fid ..... *Evolvulus*
- Style 1, undivided
  - Fruits indehiscent, baccate, coriaceous or crustaceous
    - Flowers white, salverform, stigmas linear-oblong ..... *Rivea*
    - Flowers rosy or purple, funnelform; stigmas globose ..... *Argyreia*
  - Fruits usually dehiscent with valves, coriaceous, membranous or brittle
    - Stigmas globose; ovary 2 to 4-celled
      - Stems winged, capsules dehiscing circumscissa or irregular ..... *Operculina*

[illegible]

Porana [illegible]

P. paniculata Roxb. [illegible] 235 (1815) FBI 4 [illegible]

[illegible] hoary-hairy shrub. Leaves 5-10 × 4-[illegible] Flowers small, white, numerous, in large [illegible] panicles.

[illegible] of India. Grown for ornamental purposes along walls and trellises [illegible]

Local name : Dewa. English name : Bridal creeper.
Flowers : Oct.-Jan.
J. K. Maheshwari 1166, Mughal Gardens.

Cressa Linn.

C. cretica Linn. Sp. Pl. 223, 1753; FBI 4 : 225; FUGP 2 : 103; Parker For. Fl. 36.

A small erect densely branched annual about 15 cm tall. Leaves crowded, densely hairy, ascending. Flowers white, in small clusters in the axils of upper leaves. Corolla lobes reflexed. Stamens exserted. Capsules ovoid, pointed.

Common in the sandy and saline tracts and cultivated fields of Timarpur and Karnal Road. Used as a cooling medicine.

Local name : Nunki.
Flowers and Fruits : May-July.
J. K. Maheshwari 168, Timarpur.

Evolvulus Linn.

E. alsinoides Linn. Sp. Pl. 392, 1762; FBI. 4 : 220; FUGP. 2 : 104; Merr. Enum. 3 : 357; Santapau in RBSI 16(1) : 190, 1953.
Convolvulus alsinoides Linn. Sp. Pl. 157, 1753.

A spreading or ascending, much-branched, densely hairy herb. Branches several from a woody rootstock. Leaves distichous, clothed with appressed pubescence. Flowers light blue or blue, in 1 to 3-flowered, axillary filiform peduncles. Capsules 4-seeded. Seeds irregular, glabrous, very dark brown.

Common throughout on moist or dry, sandy soils. Occurs on the Ridge in gravelly soil or in the crevices of stones.

[illegible]
J. K. Maheshwari [illegible] (Haryana)

Rivea Choisy

R. hypocrateriformis [illegible] in Mem. Soc. [illegible] 9: 434. 1849; FUGP 2: [illegible] Parker, [illegible] 1963.

A climber [illegible] Flowers white [illegible] Fruits globose.

Common near the Maika View on the Ridge. Also [illegible] near Gurukul [illegible] and Mehrauli [illegible] shrubs and trees. In the area near Gurukul, it [illegible] *Rivea monosperma* Taub. and hence its local name. The plant is very nearly related to *R. ornata* Choisy and needs field observations. The flowers remain closed during the day. The leaves of detached plants turn purplish-black.

Local name : Dhak ki bel ; Amarbel
Flowers : Aug.-Sept. Fruits : Oct.-Nov.
J. K. Maheshwari 1147, Mehrauli, 1232, near Gurukul (Faridabad)

Argyreia Lour.

A. nervosa (Burm. f.) Boj. Hort. Maurit. 224, 1837 ; Metr. Enum. 3: 371, Santapau in RBSI. 16(1): 194, 1953.

Convolvulus nervosus Burm. f. Fl. Ind. 48, t. 20. f.1, 1768.

Argyreia speciosa Sweet, Hort. Brit. 289, 1827; FBI 4: 185.

A large climber with white-tomentose stems. Leaves ovate, cordate, glabrous above, densely white-tomentose beneath. Flowers rosy-purple in subcapitate cymes. Bracts large, foliar.

Cultivated for its handsome flowers and foliage. It is often confused with *Ipomoea carnea* Jacq., which is also cultivated in the area. In the latter, stems are fistular and leaves are glabrous on both surfaces.

Local name : Ghabel, Bansa

Operculina Silva Manso

O. turpethum (Linn.) Silva Manso, Enum. Subst. Bras. 16 & 49. 1836; FUGP 2 : 110; Metr. Enum. 3 : 363.

Convolvulus turpethum Linn. Sp. Pl. 155, 1753.

Ipomoea turpethum R. Br. Prodr. 485, 1810.

A stout, climbing perennial. Stems angled and winged. Leaves ovate to oblong, cordate or truncate at base. Flowers white, in few-flowered cymes. Peduncles stout. Bracts large, subpersistent, often

pinkish. Outer sepals acrescent. Capsules globose, enclosed in the enlarged, hollow calyx segments. Seeds black, round.

A climber on trees in the fruit orchards of Karnal and Azadpur Roads and hedges around fields.

Flowers : Nov.-Dec. Fruits : Jan.

J. K. Maheshwari 559, Azadpur Road.

Ipomoea Linn.

Corolla tubular or salver-shaped, stamens exserted or included.

Flowers orange or scarlet, in elongate, dichasial, racemiform cymes . . . *I. lobata*

Flowers red or purplish, in 1 to few-flowered cymes :

Stems muricate, flowers pale purple, night-bloomers . . . *I. muricata*

Stems not muricate, flowers red or scarlet.

Leaves ovate-cordate . . . *I. angulata*

Leaves with fil. form segments . . . *I. quamoclit*

Corolla campanulate or funnel-shaped, stamens included.

Large straggling or diffuse shrubs, flowers pink . . . *I. carnea*

Herbaceous or woody twiners, trailers or climbers.

Floating aquatic or amphibious herbs . . . *I. reptans*

Terrestrial plants.

Prostrate, long-trailing and rooting herbs with edible tuberous roots . . . *I. batatas*

Stems twining, not rooting, roots not tuberous.

Leaves entire :

Outer sepals sagittate or cordate at the base . . . *I. sinensis*

Outer sepals not cordate at the base :

Flowers in sessile or subsessile heads.

Flowers pink ; capsules hairy . . . *I. eriocarpa*

Flowers white, capsules glabrous . . . *I. sindica*

Flowers in pedunculate, 1 to few-flowered cymes.

Leaves silvery white-woolly beneath, flowers pink or rosy . . . *I. pilosa*

Leaves not white-woolly beneath :

Flowers small, white with yellow bands and purple at base . . . *I. obscura*

Flowers large, showy, blue or purple.

Sepals short and thick . . . *I. violacea*

Sepals prominently acute . . . *I. purpurea*

Leaves lobed or compound (entire in *I. pes-tigridis* var. *capitellata*).

Prostrate, glabrous herbs ; leaves digitate ; flowers white . . . *I. coptica*

[illegible]

Ipomoeas

Flowers [illegible]

[illegible] by large bracts

Flowers [illegible] few-flowered [illegible]

[illegible] by large bracts

Sepals [illegible] hirsute [illegible]

[illegible] leaves [illegible] lobulate [illegible]

Sepals not densely hirsute

Leaves [illegible] or [illegible]

[illegible] whole, ligulate tips [illegible]

Leaves 3-lobed sepals with long [illegible]

tips [illegible]

I. lobata (Cerv.) Thell. in Vierteljahrs. Nat. Ges. Zürich 64 [illegible] Bor. & Raiz. 8. [illegible]

Mina lobata Cerv. in De La Llave & Lex. Nov. Veg. Desc. fasc. 1 824

Quamoclit lobata (Cerv.) House in Bull. Torrey Bot. Cl. 16 602 [illegible]

Ipomoea versicolor Meisn. in Mart. Fl. Bras. 7 200. 1869

A climber with stout, wiry, intertwining stems and branches [illegible] fringed with purple. Leaves palmately 3-lobed, cordate w[illegible] a broad sinus, glabrous. Inflorescence an elongate dichasia racemiform cymes. Flowers orange and scarlet, soon fading to pale yellow, tubular. Capsules 3 to 4-seeded.

Native of Mexico. Grown in gardens and across the wiry fences.

Flowers : Cold season.

J. K. Maheshwari 994, University Gardens.

I. muricata (Linn.) Jacq. Hort. Schoenbr. 3 40 t. 323, 1798 (non Cav. 1799), FBI. 4 . 197 , Santapau in RBSI 16(1) 191 1953

Convolvulus muricatus Linn. Mant. 44, 1767

Calonyction muricatum G. Don Gen. Syst. 4 264, 1837 , FLGP 2 : 118

A twining shrub. Stems muricate. Leaves broad ovate, entire, glabrous, long-petioled, deep cordate , auricles round. Flowers pure purple, on 1 to 5-flowered peduncles , pedicels thickened upwards in fruit. Capsules 2.3 × 1.5-2 cm , globose, pointed, 4-seeded.

Found on the Ridge during rains, twining upon other Ipomoeas or spreading on the shrubs. The flowers open after dark and fade away next morning.

Flowers and Fruits : Aug.-Nov.

J. K. Maheshwari 1276, Ridge

I. angulata Lamk. Tabl. Encycl. 1 464, 1793 Santapau in RBSI 16(1) : 192, 1953

[illegible] Roth) Choisy in Mém. Soc. Phys. Genève [illegible]

[illegible] Roth, 11 fol. 2 92, 1834

[illegible] FBI 4 199 1883 (non Linn.)

[illegible] Cooke in Pres. Bomb. 3 26 1904 (non Moench)

A [illegible] annual. Leaves broad ovate, cordate, [illegible] Flowers red, in few flowered, long peduncled cymes, narrowly funnel shaped.

Grown for ornamental purposes in gardens.

Flowers Oct. March

I. quamoclit Linn. Sp. Pl. 159, 1753 FBI 4 199 Santapau in RBSI (61), 191, 1953

Quamoclit pinnata (Desr.) Boj. Hort. Maurit. 224, 1837; Bor & Raiz. 3, f.

Convolvulus pennatus Desr. in Lamk. Encycl. 3 567, 1792

Quamoclit vulgaris Choisy in Mém. Soc. Phys. Genève 6 434, 1833

Quamoclit quamoclit Britton & Brown, Fl. North Unit. Stat. 3 22 898 nom. illegit.

A glabrous, slender annual. Leaves pinnately divided into filiform segments. Flowers red, on 1 to few-flowered peduncles. Corolla narrowly funnel-shaped.

Grown as an ornamental annual along the trellises and walls of gardens.

Flowers - Winter season

J. K. Maheshwari 1372

I. carnea Jacq. Enum. Pl. Carib. 13, 1760; Haines, Bot. Bih. & Or. 600; Parker, For. Fl. 365; Bor & Raiz. 6, f. 5

A large, diffuse or straggling, leafy shrub, with milky juice. Stems fistular. Leaves ovate, cordate, acuminate, 15-22 × 10-15 cm. Flowers large, pink, in lax, dichotomous, axillary and terminal cymes.

Grown as an hedge in gardens and along roadsides of villages.

Flowers Aug. Feb.

J. K. Maheshwari 396; 1165, Najafgarh

I. reptans (Linn.) Poir. in Lamk. Encycl. Suppl. 3 460, 1814; FUGP 2 114; Merr. Enum. 3, 368

Convolvulus reptans Linn. Sp. Pl. 158, 1753

Ipomoea aquatica Forsk. Fl. Aegypt.-Arab. 44, 1775; FBI. 4: 210.

An aquatic, trailing, amphibious herb, rooting at the nodes. Leaves elliptic or ovate-oblong, cordate or hastate. Flowers pale rosy, erect, on 1 to 5-flowered peduncles. Capsules ovoid, glabrous.

Common in ponds, canals, ditches and muddy grounds. The young shoots and leaves are eaten as vegetable.

[illegible] one Species [illegible]
Flowers and Fruits : Nov-Dec
J. K. Maheshwari 813

I. batatas (L.) Lamk. Tabl. Encycl. 3 : 465 [illegible]
[illegible] Merr. Enum. [illegible] 134 : 953
[illegible] Pl. 154 [illegible]
Bat[illegible] [illegible] Mem. Soc. Phys. Geneve 6 : 445 [illegible]
A [illegible] glabrous tuberous plant [illegible] the flowers. Tubers white or red. Leaves ovate or oblong [illegible] Flowers purple. [illegible] axillary peduncles.
Cultivated for its edible tubers in gardens and fields. The flowers open in the evening.

Local name : Shakarkandi
Flowers : Nov.-Dec
J. K. Maheshwari, cultivated

I. sinensis (Desr.) Choisy in Mém. Soc. Phys. Genève 6 : 459 833
Verdcourt in Kew Bull. 204 1958
Convolvulus sinensis Desr. in Lamk. Encycl. 3 : 557 1792
Ipomoea calycina Cl. in FBI 4 : 201, 1883
A twining, slender annual, with villous stems. Leaves 4-6 x3-4 cm., ovate, cordate, acuminate. Flowers white, tubular 1-3 together. Outer sepals with sagittate bases. Capsules ovoid, pointed, deflexed, glabrous.
Rare on the Ridge where it twines on trees and shrubs.

Flowers and Fruits : Sept.
J. K. Maheshwari 1267, Old Delhi Ridge

I. eriocarpa R. Br. Prodr. 484, 1810. FBI 4 : 204, Excll. Cat. Vas. Pl. S. Tomé 250
I. hispida (Vahl) Roem. & Schult. Syst. 4 : 238, 1819 (non Zuc. 1809), FUGP 2 : 113
Convolvulus hispidus Vahl, Symb. Bot. 3: 29, 1794
A robust, twining, villous annual. Leaves broad ovate to triangular-hastate, hairy, lobes rounded. Flowers pink, in shortly stalked, dense, axillary heads. Capsules hairy, 6-8 x 6-8 mm., globose, 4-seeded, immature ones purplish.
Occurs on the Ridge twining on *Capparis sepiaria* Linn., and other plants. Met commonly in fields on Jowar and Bajra. Said to be useful in the neck troubles of bulls.

Local name : Ghiabato, Boota
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1268, Old Delhi Ridge, 1273, 1289, Vallabhgarh

[illegible]

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 421, Ridge.

I. pilosa Sweet, Hort. Brit. 750, 1827; FBI. 4 : 203; FUGP. 2 : [illegible]

An annual, twining shrub. Stems hirsute. Leaves broad ovate, [illegible] cordate, [illegible] white-woolly beneath. Flowers pink or rosy, in lax cymes. Sepals partly accrescent, densely hairy. Capsules 10 : 7-9 mm., subglobose, hairy towards the apex. Seeds velvety pubescent.

Common on the Ridge during the monsoon, twining upon trees and shrubs. The flowers open in the morning. The leaves are attacked on the lower surface by a species of *Albugo*.

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 373, Old Delhi Ridge.

I. obscura (Linn.) Ker-Gawl. in Bot. Reg. t. 239, 1817; FBI. 4 : 207; FUGP. 2 : 115; Merr. Enum. 3 : 366.

Convolvulus obscurus Linn. Sp. Pl. 220, 1762.

A slender annual, twining plant, glabrous or slightly villous. Leaves broad ovate, cordate, acute or acuminate, entire. Flowers white with yellow bands, purple at the base, usually on 1-flowered peduncles.

Rare in the hilly tracts.

Flowers : Oct.

J. K. Maheshwari 1333, near Gurukul (Faridabad).

I. violacea Linn. Sp. Pl. 161, 1753.

I. rubro-caerulea Hook. in Bot. Mag. t. 3297, 1834.

I. tricolor Cav. Ic. 3 : 5, t. 208, 1795; Bailey, Man. Cult. Pl. 820.

An extensively twining, glabrous annual. Leaves broadly cordate-ovate, entire, often broader than long. Flowers azure-blue, fading to purplish-red, on axillary, dichotomously branched, 3 to 9-flowered peduncles, pedicels thickened. Capsules 4-valved, 4-seeded.

Native of Mexico. Cultivated for ornamental purposes. Also used for covering walls, trellises and dirty places, due to its rapid and dense growth. The flowers open early in the morning and fade in the evening and hence its common name.

English name : Morning glory, Heavenly blue.

Flowers [illegible] Dec [illegible] Jan Feb
J K Maheshwari 1374

I purpurea [illegible] Roxb Hort Bengal 37 1798 [illegible]
[illegible] Linn S Pl [illegible]
A hairy [illegible] Leaves [illegible] Flowers purplish or incrusted [illegible] funnel shaped large [illegible] on axillary peduncles
Cultivated as an ornamental climber on trellises and walls in gardens

English name Morning glory
Flowers Dec March
J K Maheshwari 1379

I. coptica (Linn) Roth apud Roem. & Schult. Syst. 4 : 209. 1819 & Nov Pl Sp [illegible]
Convolvulus coptica Linn. Mant. 559, 1771
Ipomoea disse ta Willd Phytogr. 5, t. 2, f 3, 1794, FBI 4. 200 FUGP 2 115

A glabrous, prostrate or twining herb Leaves digitate lobes 3-7 deeply serrate. Flowers white, solitary Capsules subglobose, glabrous.

Found in fallow and cultivated fields of villages on moist, shady situations, often twining amongst the grasses

Flowers and Fruits - Sept.-Oct
J K Maheshwari 992, Najafgarh fields

I. pes-tigridis Linn Sp Pl 162, 1753, FBI 4 204, FUGP 2 16 Merr Enum. 3 367 Santapau in RBSI 16(1) 193 1953
I pes tigridis var. *hepaticifolia* Cl in FBI 4 204, 1883.
I. hepaticifolia Linn. Sp. Pl. 161, 1753

A spreading or twining, hispid shrub Leaves deeply palmate, 5 to 7-lobed Flowers white or pinkish, in long-peduncled heads Bracts conspicuous, outer ones larger Corolla funnel-shaped Capsules hidden in the calyx

Common on the Ridge during rains either climbing on shrubs and trees or spreading on the ground. Also met as a weed in fields and unused grounds. It is a beautiful sight on the Ridge to look at these blooms when they open abundantly in the afternoon The leaves are attacked by a species of *Albugo*

Local name : Ghiabatt
Flowers : Sept.-Oct. Fruits : Oct.-Dec
J K. Maheshwari 422, Old Delhi Ridge

I. pes-tigridis Linn var **capitellata** Cl in FBI 4 204, 1883 Haines Bot. Bih. & Or 595

[illegible] from the [illegible] on powerline and [illegible] leaves

Flowers and Fruits : Sept.-Dec.

J. K. Maheshwari [illegible], Hansi

I. pentaphylla [illegible] 4 [illegible]

A twining herbaceous annual. Leaves digitately 5-foliolate [illegible] 7.5 cm. [illegible] usually concealed by [illegible] at [illegible]. Flowers white, funnel-shaped [illegible] mous peduncles. Sepals large, densely hirsute with [illegible] Capsules ovoid, papery.

A new record from the Upper Gangetic Plain. Common on the Ridge during the rainy months twining or spreading on the shrubs and trees. The seeds are said to be edible.

Local name : Ghabel

Flowers : Sept.-Oct. Fruits : Nov.-Dec.

J. K. Maheshwari 1261, Old Delhi Ridge ; 1269

I. cairica (L. ex.) Sweet, Hort. Brit. 287, 1827 ; Santapau in RBSI 16(1), 91, 1953

Convolvulus cairicus Linn. Syst. 922, 1759.

Ipomoea palmata Forsk. Fl. Aegypt.-Arab. 43, 1775 ; FBI 4 : 214 ; Bot. & Raz. 6, f. 4, Pl. 1, 2

I. pulchella Wt. Ic. 1. 156, 1839 (non Roth).

A glabrous climber. Leaves digitate, deeply palmately lobed [illegible] elliptic or lanceolate. Peduncles 1 to 3-flowered. Flowers large, pale purple, campanulate.

Grown on trellises as well as in the hedges of gardens and [illegible] shrubberies for its flowers and foliage. Also planted as an ornamental climber at railway stations.

Flowers : Rainy season

J. K. Maheshwari 305, Najafgarh

I. nil (Linn.) Roth. Cat. Bot. 1 : 36, 1797 ; Santapau in RBSI 16(1) : 192, 1953

Convolvulus nil Linn. Sp. Pl. 219, 1762

Ipomoea hederacea Ca. in FBI 4 : 199, 1883 ; Fl. GP 2 : 116 ; *et al. plur. auct.* (non Jacq.)

A twining or spreading shrub. Stems retrorsely hairy. Leaves ovate-cordate, 3-lobed. Flowers deep blue tinged with pink, on 1 to 5-flowered peduncles. Capsules 3-celled, 6-ovuled, subglobose or ovoid, glabrous.

Common on the Ridge and in the plains amongst shrubs or hedges or twining upon other climbers.

Local name [illegible]
Flowers and Fruits [illegible]
J. K. Maheshwari [illegible]

Convolvulus [illegible]

[illegible]

[illegible]

C. arvensis Linn. Sp. Pl. 153, 1753 [illegible]

A creeping [illegible] herb [illegible] Leaves [illegible] pink or white, solitary axillary [illegible] capsules [illegible]

A common weed of cultivation, often occurring [illegible] grain and [illegible] It is uprooted from [illegible] fodder.

Local name : Hirankhuri
Flowers and Fruits : July-Oct
J. K. Maheshwari 307, University Campus

C. pluricaulis Choisy, Convol. Or. 95, 1833, FBI 4. 218, FUGP 3 105

A prostrate or suberect, spreading, hairy, perennial herb. Leaves ovate-lanceolate to linear. Flowers white or pinkish, solitary or paired. Corona shortly funnel-shaped. Capsules oblong-globose, pale brown, pericarp chartaceous. Seeds brown, minutely puberulous.

Common in sandy and rocky, dry places.

Flowers and Fruits : Major part of the year
J. K. Maheshwari 171, Timarpur, 490, University Campus

Jacquemontia Choisy

J. pentantha (Jacq.) G. Don, Gen. Syst. 4. 283, 1838, van Oostroom in Fl. Males. (ser. 1) 4(4) : 475, 1953.

Convolvulus pentanthus Jacq. Coll. 4 : 210, 1791

A climber. Leaves ovate, cordate, entire. Flowers pretty blue, in axillary, compound, umbellate cymes. Peduncles long.

A garden plant, grown for ornamental purposes along trellises, poles and walls.

Flowers : Oct.-Dec.
J. K. Maheshwari 991, Mughal Gardens

Cuscuta L.

Corolla [illegible] three times as long as calyx — C. reflexa
Corolla less than twice as long as calyx — C. hyalina

C. reflexa Roxb. Pl. Cor. 2: 3, t. 104, 1799 & Fl. Ind. 1: 446, 18[illegible] FBI 4: 2[illegible] Fl. [illegible] 2: 110 Parke Fl. Fl. 164

A leafless stem parasite. Branches fleshy, forming dense yellow masses on trees and shrubs. Flowers pale white, [illegible] in racemes. Corolla lobes reflexed. Stigmas divergent. Capsules depressed-globose.

Common in the hedges of gardens during winter months.

Local name: Amarbel
Flowers: Cold season
J. K. Maheshwari 993 Talkatora Gardens, on *Nerianthes* sp. 1412, Roshanara Gardens

C. hyalina Roth Nov. Pl. Sp. 100, 1821 Santapau in JBNHS 47(2) 339 1947

A leafless, [illegible]-form, stem parasite, much slender than *C. reflexa* Roxb. and often found on the ground. Branches forming dense, yellow masses on herbage. Flowers pale yellow, bracteate, in dense clusters, tetra- or pentamerous. Corolla scales absent. Stamens exserted in between the corolla lobes. Styles 2, unequal filiform, stigmas capitate. Seeds 4, brownish, triangular.

Found during the monsoon period, when it parasitizes many season annuals, especially *Tribulus terrestris* Linn., *Cleome viscosa* Linn., *Trianthema govindia* Buch.-Ham., and others. Common in the University Campus along roadsides, producing a yellow colour on the green turf.

Local name: Amarbel
Flowers and Fruits: July-Oct.
J. K. Maheshwari 378 Timarpur, on *Adhatoda vasica* Nees, 989 University Campus.

72. Solanaceae

Calyx inflated, greatly enlarged and enclosing the fruit.
- Flowers solitary, yellowish . . . . . *Physalis*
- Flowers clustered, greenish or yellowish — *Withania*

Calyx not greatly enlarged and never completely enclosing the fruit. Fruit a capsule.
- Calyx nearly or quite covering the fruit. . . . . *Nicotiana*
- Calyx much shorter than fruit and reflexed — *Datura*

Fruit a berry
Flowers [illegible]
[illegible]
[illegible]
Anthers opening by [illegible]
Anthers opening by long slits [illegible]
Corolla tubular [illegible]
Flowers solitary or in twos or threes, axillary [illegible]
Spinous shrubs, plants wild [illegible]
[illegible] herbs or [illegible] shrubs, cultigens [illegible]

Physalis Linn

P. minima Linn. Sp. Pl. 183, 1753, FBI, 4 : 238 ; FUGP 2 : 27 ; M. Enum. 3 : 423, Santapau in RBSI, 16(1) : 197, 1953

A prostrate or erect herb. Stems striate. Leaves 4-10 × 2.5-5 cm ovate, entire or distantly crenate. Flowers yellow, solitary on reflexed pedicels. Calyx in flower about 5 mm long, not angular. Berries 8-[illegible] × 3 mm enclosed within the inflated, 5 to 10-ribbed calyx. Seeds discoid or reniform, muriculate.

A weed in fields, waste localities and along roadsides on moist stations. The mature fruits are sold in the market and village children often eat them.

Local name : Papotan
Flowers and Fruits : July-Oct
J. K. Maheshwari 87 ; 240 ; 302. Old Fort

P. minima Linn. var **indica** Cl. in FBI 4 : 238, 1883 ; FUGP 2 : 128

It differs from the typical plant in the glabrescent leaves and pentangular calyx enclosing the fruit. No basal spots on the corolla.

Local name : Papotan
Flowers and Fruits : July-Oct

Withania Pauq. nom. cons.

W. somnifera (Linn.) Dunal in DC. Prodr. 13(1) : 453, 1852 ; FBI 4 : 239 ; FUGP 2 : 128 ; Parker For. Fl. 369 ; Santapau in JBNHS 47(4) : 657, 1948

Physalis somnifera Linn. Sp. Pl. 182, 1753 ; Wt. Ic. t. 8553

An erect, stout, branching undershrub, 1.5 m or less in height, nearly throughout stellate-tomentose. Leaves 7-15 × 4-8 cm, ovate, base unequal. Flowers greenish or lurid yellow, usually 5 together in umbelliform cymes. Stamens inserted. Berries red when ripe, turning dull brown, enclosed in the bladder-like, inflated calyx. Seeds subreniform, pale brown, polished, wrinkled.

[illegible] and on dry [illegible] near gardens [illegible] often on [illegible] The plant is in demand [illegible] extent of [illegible]

Local name : Aspand
Flowers : [illegible] Nov.
J. K. Maheshwari [illegible] Sarai Rohilla

Nicotiana [illegible]

[illegible] pink ; naturalized [illegible] *N. plumbaginifolia*

[illegible] tube narrow below ventricose above [illegible] *N. tabacum*

N. rustica Linn. Sp. Pl. 180, 1753 ; FBI. 4 : 245, Duthie & Fuller, Field & Gard. Crops [illegible]

A [illegible] acid pubescent annual. Leaves petiolate, lower ones large broad ovate or suborbicular, upper ones smaller and narrower. Flowers greenish-yellow in terminal, paniculate racemes. Capsules globose.

Cultivated during the cold season.

Local name : Tambaku
Flowers : Nov.-March
J. K. Maheshwari, cultivated.

N. plumbaginifolia Viv. Elench. Pl. Hort. Dinegro 26. t. 5. 1802 ; Haines Bot. Bih. & Or. 616.

An erect, shallow-rooted herb, sticky-glandular throughout, up to 0.6 m. tall. Leaves forming a rosette at base, upper ones elliptic, ovate-elliptic or lanceolate, stem clasping ; rosette leaves much larger than the cauline ones. Flowers pale pink, in distant, lax racemes. Corolla tube long, linear. Capsules about 10 × 6 mm., ovoid.

A new record from Delhi State. An introduced weed from Mexico and West Indies. It has become naturalized along roadsides, canal banks, in [illegible] waste situations and cultivable ground. Common at Okhla and near the Jamuna Bridge.

Local name : Jangli tambaku
Flowers : April-June. Fruits : May-June
J. K. Maheshwari 97, Roshanara Gardens.

N. tabacum Linn. Sp. Pl. 180. 1753 ; FBI. 4 : 245 ; Duthie & Fuller, op. cit. 69 ; t. 16 ; Santapau in RBSI. 16(1) : 199. 1953.

An erect, large, viscid annual. Lower leaves large, oblong or ovate-

[illegible]

Flower [illegible]

[illegible]

J. K. [illegible]

Datura [illegible]

For nomenclatural problems and correct identity of species of Daturas of India, see Safford [in Jour. Wash. Acad. Sc. 7:189, ff. 1-3, 1921; in Jour. Hered. 12: [illegible] and in Ann. Rep. Smith. Inst. 1920: 537-567, ff. [illegible] 1922] and Santapau in JBNHS. 47(4): 652-662, 1948.

Glabrous or subglabrous plants; corolla 5-toothed; fruits subglobose or armed with short spines — *D. [illegible]*

Pubescent plants; corolla 10-toothed; fruits armed with long, weak spines — *D. [illegible]*

D. metel Linn. Sp. Pl. 179, 1753; Santapau, op. cit. 657.

D. fastuosa Linn. Syst. 2: 932, 1759; FBI. 4: 242; Wt. Ic. t. 1396.

D. alba Nees in TLS. 17: 73, 1834; Wt. Ic. t. 857.

D. fastuosa var. *alba* Cl. in FBI. 4: 243, 1883.

D. alba Rumph. Herb. Amb. 5: 242, t. 8, f. 1, 55.

A shrub-like herb with dichotomous branches, 0.6-1.2 m. high. Older branches marked with scars of fallen leaves. Leaves ovate, sinuate, unequal sided at the base. Flowers large, funnel-shaped, white, dirty whitish, violaceous, reddish-purple or purple on the outside and white within. Calyx base persistent, reflexed. Capsules globose, prickled, on a short, curved stalk becoming inclined or nodding, opening irregularly. Seeds light brown.

Found in waste places and gardens.

Local name: Dhatura.

Flowers: Nov.-Jan. Fruits: Jan.-April.

J. K. Maheshwari 1371.

D. innoxia Mill.* Gard. Dict. n. 5, 1768; Santapau, op. cit. JBNHS. 47(4): 659, 1948 & in RBSI. 16(1): 198, 1953.

D. metel Sims in Bot. Mag. t. 1440, 1812; FBI. 4: 243 (non Linn.).

A short, stout shrub with grey tomentum. Leaves ovate-lanceolate to broad ovate, unequal at the base. Calyx reflexed in fruit. Corolla white. Capsules globose, clothed with sharp spines.

*This is an American plant introduced into India and mentioned in Indian flora under the wrong name of *Datura metel* Linn.

Common near [illegible] and open waste places. The leaves are used in medicine for relief in [illegible]

Local name: Dhatura

Flowers and fruits: Nov.-Jan.

J. K. Maheshwari 361; Shahdara

Solanum Linn.

Small trees . . . *S. grandiflorum*

Herbs, undershrubs or shrubs

Plants unarmed

Roots with tubers . . . *S. tuberosum*

Roots without tubers; flowers white . . . *S. nigrum*

Plants armed with prickles (except *S. melongena* which may be armed or not):

Prostrate or ascending herbs with long, straight prickles . . . *S. surattense*

Erect shrubs or undershrubs or herbaceous (in *S. melongena*)

Flowers violet or purple, 2.5 cm. or more across

Berries globose, yellow turning to black; calyx usually prickly . . . *S. indicum*

Berries round, oval or elongate-cylindric; calyx not prickly; cultigens . . . *S. melongena*

Flowers white, less than 2.5 cm across; undershrubs or shrubs; leaves without prickles . . . *S. torvum*

S. grandiflorum Ruiz & Pav.* Fl. Peruv. 2: 35, t. 168, 1799; Blatt & Mill. Beaut. Ind. Tr. 134, t. 28.

S. wrightii Benth. Fl. Hongk. 243, 1861

A small, sparsely thorny tree about 6 m. tall, branching near the ground. Stems grey-white with longitudinal wrinkles. Leaves fleshy, 8-23 × 6-12 cm., tomentose, rough, deep sinuate or lobed, prickly along veins and often on lower surface. Flowers deep violet, in extra-axillary racemes.

Introduced. Planted in the hedges of gardens. The ants often eat away the flowers and no fruits could be observed.

Flowers: July-Aug.

J. K. Maheshwari 1128

S. tuberosum Linn. Sp. Pl. 185, 1753; FBI. 4: 229; Duthie & Fuller op. cit. 3: 15; Santapau in RBSI. 16(1): 196, 1953.

A herb 0.3 to 1 m. tall, with underground, stem tubers. Leaves odd-pinnate with 3-4 pairs of entire leaflets. Flowers white to bluish, in forking clusters.

* The tree is erroneously known in India as *S. macranthum* Dunal (see Blatt. & Mill. loc. cit.)

[illegible]

S. nigrum [illegible] 186[illegible] [illegible] FBI 4 [illegible] [illegible]
[illegible] Santapau in RBSI [illegible] [illegible]
S. [illegible] Mill. [illegible] 4 [illegible] 6X
An erect [illegible] herb. [illegible] 4 [illegible] 5.2 cm [illegible] vate, sinuate or lobed, dark green. Flowers [illegible] drooping, subumbellate extra-axillary cymes. Berries [illegible] red [illegible] polished. Seeds [illegible]

A very common weed in cultivated and fallow fields as well as the shady places in gardens. Also found in the crevices of walls and floors of ancient buildings. Used for inflammations. The black fruit taste better than the red ones.

Local name : Makoi ; Chirmothi : Makoh
Flowers : Cold and summer season : [illegible] June-Aug.
J. K. Maheshwari 130 Sarai Rohila Gardens

S. surattense Burm. f. Fl. Ind. 57, 1768 (excl. syn. Pluk. & Ray.) Santapau in RBSI 16(1). ed. 2, 154 1969

S. *xanthocarpum* Schrad. & Wendl. Sert. Hanov. [illegible] 8. t. 2, 1795 FBI 4 : 236.

A very prickly, deep-rooted, prostrate or ascendingly spreading undershrub. Prickles numerous, large, yellow. Leaves 5-[illegible] 3.5-8 cm. ovate or elliptic, pinnately lobed. Flowers blush-purple few in extra-axillary cymes. Berries 1.5-2 [illegible] 2 cm. globose, yellow. Seeds smooth.

Grows commonly in waste places, on saline grounds and along roadsides. Also found as a weed in cultivated grounds. The crushed fruits are applied on sores. White-flowered form occurs rarely in the area.

Local name : Berkateu
Flowers : June-Sept. ; March
J. K. Maheshwari 22 ; 115, Najafgarh

S. indicum Linn. Sp. Pl. 187 1753 (in part.), Wt. Ic. t. 346 FBI 4 234, Fl. Gilt. 2 125 Parker Flor. Fl. 367, Santapau in RBSI 16(1) : 196, 1953

An erect or diffuse, thorny, woolly-tomentose undershrub, 1.2-1.5 m

[illegible] Leaves 5-8 × 2-3 cm [illegible] along the midrib [illegible] extra-axillary cymes subreflexed [illegible] Berries about 2.5 [illegible] globose [illegible] turning to black [illegible] Found in waste dry places near [illegible] the hot dry months the leaves become [illegible] and give a scorched appearance. The seeds are [illegible]

Common name: Kaler, Kanta [illegible] Bangalakater, [illegible] Kater

Flowers: July. Fruits: June

J. K. Maheshwari 140, 1176. Najafgarh Canal Banks.

S. melongena Linn. Sp. Pl. 186, 1753; FBI. 4 : 235. Merr. [illegible] 427. Santapau, loc. cit.

S. esculentum Dunal, Hist. Solan. 208, 1813.

An erect or diffuse undershrub, prickly or not. Leaves up to 5-9 × [illegible] ovate, sinuate or lobed, pale beneath, grey-tomentose. Flowers violet or bluish, in extra-axillary cymes. Berries round, ovoid, or elongate cylindric, deep purple.

Grown as garden vegetable for its edible fruits. Three sowings are made during the year in Delhi State—(1) February, (2) June and (3) October, so that the fruits are available in the market from April to October.

Local name: Baingan; English name: Brinjal.
Flowers: July-Sept. Fruits: April-Feb.
J. K. Maheshwari 355.

S. torvum Sw. Prodr. 47, 1788; FBI. 4 : 234; Haines, Bot. Bih. & Or. 612; Santapau in JBNHS. 47(4) : 654, 1948.

S. indicum Linn. Sp. Pl. 187, 1753, in part.

S. stramonifolium Roxb. Fl. Ind. 1 : 572, 1832 (non Jacq.).

An erect, branched shrub up to 3.5 m tall. Stems, branches and petioles sparsely prickly and woolly-tomentose. Leaves up to 30 × 8 cm, sinuately lobed, without prickles. Flowers in extra-axillary, dense, short racemes. Berries about 1.5 × 1.5 cm, globose, much exceeding the unarmed calyx lobes.

Common in moist, shady places of Sabzimandi and Sarai Rohilla fruit orchards, apparently running wild.

Local name: Ranbaingan; Bhurat.
Flowers and Fruits: Aug.-Dec.
J. K. Maheshwari 1348.

Lycopersicon Mill.

For the correct generic name *Lycopersicon* and not *Lycopersicum*,

[illegible]

J. esculentum M[illegible]

[illegible]

[illegible]

[illegible]

An erect herb, with spreading, long hairs on stems. [illegible] pinnate with small leaflets [illegible] Flowers yellow [illegible] yellow [illegible]

Cultigen but also spontaneous. Grown for its fruits which are available from Oct.-Nov. and March-June. Found as an escape along roads, parks, [illegible] waste situations and shady places near gardens.

Local name : Tamatar , Tomatar English name Tomato
Flowers and Fruits Cold season
J. K. Maheshwari 1403

Cestrum Linn.

Leaves oblong-ovate or elliptic ; corolla lobes erect . . *C. nocturnum*
Leaves linear or lanceolate ; corolla lobes spreading . . *C. parqui*

C. nocturnum Linn. Sp. Pl. 191, 1753 Bailey Man. Cult. Pl. 874 ; Santapau in RBSI, 16(1) : 200, 1953 ; Bor & Raiz. 119, f. 76, Pl. 45, 48.

A diffuse shrub. Leaves up to 10 x 4 cm., thin, oblong-ovate to elliptic, shining, tapering at the ends. Flowers greenish-yellow, in axillary and terminal, umbelliform racemes.

Grown for its flowers which are scented at night and hence its local name.

Local name : Rat ki rani , English name Lady of the Night
Flowers : July-Sept.
J. K. Maheshwari 694, Mughal Gardens

C. parqui L'Herit. Surp. 73, 1788 , Bailey, loc. cit.

A glabrous, small shrub. Leaves short-petioled, linear or lanceolate, tapering at the ends. Flowers pale yellow, sessile, in profuse, axillary and terminal umbels. Corolla lobes spreading.

Grown in gardens and lawns for its fragrant blooms.

Local name : Rat ki rani
Flowers : May-Sept.
J. K. Maheshwari 1373, Mughal Gardens

Lycium [illegible]

L. europaeum Linn. Sp. Pl. 192 [illegible] Parker. For. Fl. 370.

An erect [illegible] branches [illegible] spines. Leaves [illegible] in shape [illegible] late. Flowers white, solitary, [illegible] shaped. [illegible] yellow [illegible] red.

Common in the drier [illegible] Mehrauli [illegible] sandy soils. Also found hanging like *Capparis sandabat* [illegible] the crevices of walls of ancient buildings.

Local name : Chirchitta ; Khalu ; Chirmeth.
Flowers and Fruits : Oct.-March.
J. K. Maheshwari 269.

Capsicum Linn.

For descriptions and figures of the various species and varieties of *Capsicum* cultivated in India see F. J. Shaw and A. R. Knapp "The Types of *Capsicum*" in Mem. Dept. Agric. Ind. (Bot. Ser.) 16 : 59-82, tt. 2-5, 1929.

C. annuum Linn. Sp. Pl. 188. 1753. Duthie & Fuller. Fied & Card. Crops 3 : 36.

A shrubby annual herb. Peduncles solitary. Flowers white, drooping. Berries 5-10 cm. long, much longer than broad, reflexed, red or yellow, mildly pungent.

Cultivated during the rainy season for its useful fruits in the urban areas. The dried fruit is used as an ingredient in curries and other food preparations. The green pods are pickled. In Delhi the village Narela is a famous market for chillies. The following cultivars are grown: Calcutta, Spanish Giant, Golden Queen, Ruby King, Bull Rose, Sunny Brook and Pimento.

Local name : March. English name : Chillies ; Red pepper.
Flowers and Fruits : June-Oct.
J. K. Maheshwari 26.

73. Scrophulariaceae

Leaves all alternate ; corolla subrotate ; flowers yellow — *Verbascum*
Leaves all opposite or the lower only ;
  Corolla spurred or saccate at the base in front ;
    Flowers white or pinkish ; corolla saccate in front — *Antirrhinum*
    Flowers yellow ; corolla spurred in front — *Kickxia*

[illegible] not spurred [illegible]
by [illegible]
Corolla tube very [illegible]

Corolla tube [illegible]
[illegible]
Corolla [illegible] 2-lipped
Anthers 1-celled [illegible]
Anthers 2-celled, leaves mostly [illegible]
Flowers yellow
Flowers blue, purple, pink [illegible]
Corolla throat 2-lobed [illegible]

Corolla throat not lobed on the [illegible]
[illegible] 4
Corolla not 2-lipped
Calyx 5-partite; upper sepal longer and broader than others; semi-aquatic or marshy herbs [illegible] *Bacopa*
Calyx 3 to 4-lobed or 4 to 5-partite [illegible]
Minute, tufted herbs; corolla small [illegible] . . . . . *Glossi*[illegible]
Herbs; corolla lobes flat, spreading, the two [illegible] broader . . . . . [illegible]

Verbascum Linn

Woolly-tomentose herbs; stamens 5 . . . . . [illegible]
Pubescent herbs; stamens 4 *V. chinense*

V. thapsus Linn. Sp. Pl. 177, 1753; FBI 4 : 250; FLGP. 2 [illegible]
Pennell Scroph West. Himal. 40

An erect, woolly-tomentose herb resembling a tobacco when vegetative. Stems winged with the prolonged leaf bases. Radical [illegible] large. Flowers yellow, much crowded, in terminal, woolly long spike appearing cylindrical. Capsules ovoid tomentose about 8 [illegible] Seeds about 0.5 × 0.25 mm.

Occurs along canal banks in cultivated fields and along the borders of fields. collected from Todapur, near I.A.R.I.

Flowers and Fruits : Jan.-April
J. K. Maheshwari 1412, Todapur

V. chinense (Linn.) Santapau Fl. Purandhar 90 1957
Scrophularia chinensis Linn. Mant. 250, 1771
Celsia coromandeliana Vahl Symb. Bot. 3 : 79 1794; FBI 4 : 251

An erect, pubescent annual, branched or unbranched from the base. Radical leaves rosette-forming, lyrato-pinnatifid, cauline ones smaller,

passing into floral bracts. Flowers yellow, in simple or branched terminal 30-60 cm. long racemes. Capsules 7-8 mm. subglobose, glabrous, pale brown.

Common in moist shady places along tops of Jamna Bank, Nali path, Drain and stonier situations in Jamna Khadar area. An invasive herb when on bad block.

Local name: Dangra ka bunaku.

Flowers and Fruits: Summer and rainy seasons.

J. K. Maheshwari 363, 352, Hauz Khas.

Antirrhinum Linn.

A. orontium Linn. Sp. Pl. 617. 1753; FBI. 4: 253; FUGP. 2: 140.

An erect or sometimal wavy, slender herb, 15-45 cm. high. Stems glandular. Leaves 2.5-5 × 0.2-0.3 cm., linear, narrow, entire. Corolla bilipped, gibbous at base. Flowers white or pinkish, solitary, axillary. Capsules pubescent, obliquely ovoid, about 10 × 5 mm. Seeds about 1 × 0.3 mm.

Common in the corn fields during winter and early summer months and can be recognized at once by its characteristic capsules.

Flowers and Fruits: Feb.-April.

J. K. Maheshwari 925, Azadpur Road, in the fields of *Trigonella foenum-graecum*.

Kickxia Dumort.

K. ramosissima (Wall.) Janchen in Oesterr. Bot. Zeitschr. 82: 152, 1933; Pennell. op. cit. 59; Santapau in JBNHS. 49: 27, 1950.

Linaria ramosissima Wall. Pl. As. Rar. 2: 43, t. 153. 1831; FBI. 4: 251; FUGP. 2: 140.

A slender, glabrous, much-branched herb, up to 60 cm. in length. Lower leaves opposite, upper alternate, variable in shape, round-ovate to triangular-hastate. Flowers yellow, solitary, axillary, passing into long, terminal racemes, spurred. Capsules globose, pale brown. Seeds echinulate.

The plant is interesting for its special habitat. Occurs commonly in the crevices and fissures of ancient fort walls, from where it hangs downwards. On 23-7-1955, I collected a number of plants (most of them bearing mature fruits) from the fort of Nizamuddin and Humayun's tomb. Another member, *Lindenbergia indica* Kuntze, is also found in similar localities.

Flowers: April-June. Fruits: June-Aug.

J. K. Maheshwari 1123.

Russelia Jacq

Leaves broad [illegible]
Leaves linear lanceolate or ovate [illegible] upper ones reduced to scales [illegible]

R. coccinea We[illegible] in Engl. & Prantl Nat. Pflanz. [illegible] 63 (189[illegible]) & [illegible] Herb. Boiss. 2 : 562, 1894

A garden shrub. Leaves opposite or whorled [illegible] Flowers red [illegible] on short peduncles, many-flowered [illegible] cymes. Corolla tube cylindrical. Stamens 4, included [illegible]

Grown in the hedges of gardens for its flowers.

Flowers : Nov.-July

J. K. Maheshwari 219, Talkatora Gardens

R. equisetiformis Schlecht. & Cham. in Linnaea 6 : 377, 1831 ; Santapau in JBNHS. 49 : 47, 1950.

R. juncea Zucc. in Flora 15(2) Beibl. 99, 1832 ; Haines Bot. Bih. & Or. 620 ; Bor & Raiz. 227 ; Pl. 82, 83

An erect or drooping, beautiful, rush-like, much-branched shrub, resembling an *Equisetum* when vegetative. [illegible] or more [illegible] high. Stems ribbed. Leaves whorled, linear lanceolate or ovate, upper ones reduced to scales. Flowers numerous, red or bright scarlet [illegible] to 3-flowered peduncles, borne in great profusion on the drooping branches.

A garden shrub, grown in the shrubberies and hedges of gardens for its exceedingly beautiful appearance.

Flowers : June-Nov.

J. K. Maheshwari 771

Striga Lour.

S. euphrasioides (Vahl) Benth. in Comp. Bot. Mag. 1 : 364, 1835 ; FBI 4 : 299, FLGP 2 : 157, Pennell op. cit. 97, Santapau in RBSI 16 (1) : 208, 1953

Buchnera euphrasioides Vahl, Symb. Bot. 3 : 81, 1794 ; Wi[illegible] k t. 855.

An erect, strigose herb with simple or branching stems. Leaves linear, scabrous. Flowers white, solitary, axillary, forming interrupted terminal spikes. Calyx 15-ribbed, scabrous, lobes linear-subulate. Corolla tube exserted. Capsules shorter than calyx.

Grows in grassy places and on drying up areas near canals, ponds and puddles ; often mixed with grasses.

Flowers and Fruits : Cold season

P. P. Sehgal 1111, Shahdara

Lindernia [illegible]

[illegible] Kuntze Rev. Gen. 462 [illegible]

[illegible]

An erect or creeping hairy herb. [illegible] Leaves [illegible] serrate. Flowers yellow spotted with red, [illegible] axillary and terminal, spicate racemes. Capsules [illegible] exserted from the calyx, hairy [illegible] in the crevices and amongst stones [illegible] where hang downwards. Grows on dry [illegible]

Flowers and Fruits : Jan.-April
J. K. Maheshwari 740. Lodi Gardens ; 829 near Qutab

Mazus Lour

M. japonicus Thunb. Kuntze Rev. Gen. 462. 1891. Pennel Scroph. East. Temp. N. Amer. 137, Merr. Enum. 3. 432, Santapau in JBNHS. 49. 48, 1950.

Lindernia japonica Thunb. Fl. Jap. 253, 1784

Mazus rugosus Lour. Fl. Cochinch. 385, 1790

A small, glabrous or hairy, tufted herb. Leaves mostly radical 1.8 × 2.5 cm., obovate-spathulate or oblong, irregularly crenate. Flowers purplish-violet with white, in terminal, lax racemes. Capsules subglobose. Seeds very minute, pale brown.

Common in wet or damp places along banks of Jamuna River, in lawns and similar situations.

Flowers and Fruits - Jan.-March
J. K. Maheshwari 590 ; 1277

Lindernia All

Stamens 4 with perfect anthers
Upper two stamens perfect, the lower two reduced to staminodes. *L. crustacea*
Leaves parallel-nerved ; staminodes bilobed , capsules ovate or shortly oblong. *L. parviflora*
Leaves penni-nerved , staminodes entire capsules linear-oblong . . . . . *L. ciliata*

L. crustacea (Linn.) F. Muell. Cens. Austr. Pl. 97, 1882 ; Mukerjee in JBS 24 . 130, 1945 , Merr. Enum. 3 ; 437 ; Santapau in RBSI 16(1) 203 1953

Capraria crustacea Linn. Mant. 87, 1767.

Lindelofia rotundifolia Benth. Scroph. Ind. 38. 1835 ; FBI. 4 : 279 ; FLGP. 2 : 149.

A glabrous, elegant, small herb, branching from the base. Stems angular. Leaves opposite, short-petioled, entire to shallow-toothed. Flowers purplish, axillary and subracemose ; lower lip 3-lobed ; corolla-tubes equaling the calyx, 3-4 × 2-3 mm. Seeds rugose.

Common in moist soil of open, grassy lawns and fields during post-monsoon period.

Flowers and Fruits : Sept.-Oct.

J. K. Maheshwari 1290, Vallabgarh.

L. parviflora (Roxb.) Haines, Bot. Bih. & Or. 615. 1922 ; Mukerjee, op. cit. 132 ; Pennell, Scroph. West. Himal. 39.

Cynoglossum parviflorum Roxb. Pl. Cor. 3 : 3, t. 303. 1811.

Lycopsis parviflora (Roxb.) Benth. in DC. Prodr. 10 : 143. 1846 ; FBI. 4 : 278 ; FLGP. 2 : 5.

A small, erect, glabrous, diffusely branched herb. Leaves ovate-lanceolate to elliptic. Flowers white (or blue) ; FLGP. loc. cit.) on slender pedicels. Corolla much longer than the calyx. Capsules ovoid-oblong, exceeding the calyx.

A moisture-loving herb, found along the banks of Jamuna River and Najafgarh Drain.

Flowers and Fruits : June-Oct.

J. K. Maheshwari 145 ; 430.

L. ciliata (Colsm.) Pennell in Jour. Arn. Arb. 24 : 253, 1943 & Scroph. West. Himal. 32 ; Mukerjee, op. cit. 133.

Crotiola ciliata Colsm. Prodr. Desc. Grat. 14. 1793.

Buonaya brachiata Link & Otto, Icon. Pl. Sel. 2 : 25, t. 11, 1820 ; FBI. 4 : 284 ; FLGP. 2 : 15.

Lindelofia brachiata (Link & Otto) Haines, Bot. Bih. & Or. 632, 1922.

A small, glabrous herb. Stems quadrangular. Leaves oblong, sharply spinose-serrate. Flowers pink or white, in terminal racemes. Capsules linear-oblong.

Found in damp or wet places near canals, ponds, etc.

Flowers and Fruits : Late summer and rainy seasons.

Buchnera Arbl. nom. cons.

B. monnieri (Linn.) Pennell in Proc. Acad. Nat. Sci. Philad. 98 : 94, 946. Santapau in RBSI. 16(1) : 201, 1953.

Lysimachia monnieri Linn. Cent. Pl. 2 : 9, 1756.

Monniera cuneifolia Michx. F. Bor.-Amer. 2 : 22, 1803 (*Monnieria*) ; FLGP. 2 : 142.

Herpestis monniera Benth. Scroph. Ind. 30. 1835 ; FBI. 4 : 272.

A prostrate herb with spreading or ascending branches rooting at nodes. Leaves obovate-oblong or spathulate, obtuse succulent up to 1.8 × 0.6 cm. Flowers bluish-purplish or white with bluish veins, erect, solitary, short- or long-pedicellate. Capsules ovoid, glabrous, 4.5 × 3.4 mm.

A semi-aquatic or marshy herb. Common in marshy or wet places near canals, ponds and lakes. On wet muddy soil near Hindan River it forms a dense mat of plants dominating the vegetation. Said to be a nerve tonic and experiments are being conducted in Lady Irwin College, New Delhi, to study the effect of this herb on animal nerves. It is a bitter herb and also used in cure of gonorrheal troubles.

Local name: Neem-jal, Jal lep.
Flowers: Aug.-Oct. Fruits: Nov.-Dec.
J. K. Maheshwari, 316, on way to Okhla, 562, Azadpur Road, 1257, Hindan River.

Glossostigma Arn. nom. cons.

G. spathulatum Hook. ex Wt. in Arn. ex Benth. in Comp. Bot. Mag. 2: 59. 1836; FBI 4: 288; FUGP 2: 152; Pennell Scroph. West Himal. 36; Santapau in JBNHS. 49: 41. 1950.

Microcarpaea spathulata Hook. ex Wt. in Bot. Misc. 2: 101. Suppl. t. 4, 1831.

A minute tufted, weak herb, rooting at the nodes. Leaves 2.5-6 × 2 mm., narrowly spathulate. Flowers bluish, solitary, very minute. Calyx campanulate, enclosing the capsule.

It is the smallest member of the family in the area, collected once on Oct. 4, 1953 in moist or wet, sandy-clayey or muddy soils near Najafgarh Drain, often escapes notice due to its very small size.

Flowers and Fruits: Sept.-Oct.

Veronica Linn.

A prostrate herb, leaves cordate-ovate or orbicular, flowers solitary, axillary . . . . . *V. agrestis*
An erect herb, leaves oblong or linear-oblong, flowers in racemes . . . *V. anagallis-aquatica*

V. agrestis Linn. Sp. Pl. 13. 1753; FBI 4: 294; FUGP 2: 154.

A pubescent, prostrate or decumbent annual. Leaves ovate-cordate, 1.5-2.5 × 1-2 cm., coarsely crenate-serrate. Flowers white, with pinkish tinge, solitary, axillary; pedicels bent in fruit. Capsules about 3 × 5 mm., bilobed; lobes globose.

A common winter season weed in lawns, cultivated ground, moist, waste situations and recently disturbed soils; often hidden amongst

grasses and associated with *Anagallis arvensis* Linn., *Sonchus oleraceus* L., *Coronopus didymus* Sm., *Cynoglossum officinale* L., *Malva parviflora* Linn. and other winter weeds.

Flowers and Fruits : Dec.-March.
J. K. Maheshwari 615, University Gardens.

V. anagallis-aquatica Linn. Sp. Pl. 2 : 1733 ; FBI 4 : 327 ; FUGP 2 : 54.

An erect, succulent, glabrous herb, 10-30 cm. high. Stems [illegible] creeping and [illegible] as below. Leaves [illegible] Flowers pale purple or white [illegible] racemes. Capsules about 1-2.5 mm. orbicular [illegible] emarginate.

Common in moist or wet situations in the Jamuna-Khadar area along the banks of Jamuna River and temporary ponds.

Flowers and Fruits : Feb.-June.
J. K. Maheshwari 610, Timarpur.

74. Orobanchaceae

Orobanche Linn.

O. aegyptiaca Pers. Syn. 2 : 181, 1806 ; FUGP 2 : 164.
O. indica Buch.-Ham. ex Roxb. Fl. Ind. 3 : 27, 1832 ; FBI 4 : 326.

An erect, pale brown, scapigerous root parasite. Scales lanceolate. Flowers blue, many, sessile, in a somewhat lax spike. Bracts ovate acuminate. Capsules oblong.

Common in the fields, parasitic on the roots of various cultivated plants. Also found as a parasite on the roots of *Ammi majus* L. (Umbelliferae), which is grown as a winter ornamental in the University lawns.

Local name : Khumbi.
Flowers and Fruits : Jan.-April.
J. K. Maheshwari 805, 1376, on *Ammi majus* in University Gardens.

75. Lentibulariaceae

Utricularia Linn.

Pedunclea with a whorl of floats . . . . *U. stellaris*
Pedunclea without floats . . . . *U. flexuosa*

U. stellaris Linn. f. Suppl. 86, 1781 ; FBI 4 : 328 ; FUGP 2 : 165.

A rootless, aquatic herb, submerged except the inflorescence. Leaves pinnately divided into capillary segments, each with small bladders.

their bases, often in whorls of 4-5 at the nodes. Flowers yellow or cream-coloured in aerial racemes. Peduncles kept erect by a whorl of spongy floats. Calyx accrescent. Capsules globose. Seeds minute.

An aquatic herb, free floating aquatic common in the shallow temporary ponds, pukhes and ditches of village Gheora.

Flowers and Fruits : April-June.

U. stellaris Linn. f. var **inflexa** Cf. in FBI 4 : 329, 1884.

Differs from the type in possessing flowers white with violet streaks. Occurs in the Najafgarh Drain, often associated with other aquatics.

Flowers and Fruits : Sept.-Oct.

U. flexuosa Vahl, Eoum. 1 : 198, 1804 ; FBI 4 : 329 ; FI-GP 2 : 166.

A rootless, free-floating aquatic submerged except the flowers. Leaves whorled, segments filiform, possessing bladders. Flowers yellow, bracteate, in erect aerial racemes, peduncles without floats. Capsules subglobose.

Common after the rains in the Najafgarh Drain associated with other aquatics.

Flowers : Sept.-Nov. Fruits : Dec.-Jan.

J. K. Maheshwari 479.

76. Bignoniaceae

Erect trees or shrubs
- Leaves simple — *Tecomella*
- Leaves compound :
  - Leaves digitately 3 to 5-foliolate :
    - Petioles narrowly winged, flowers solitary or clustered on tubercles on the old wood . . . . . — *Parmentiera*
    - Petioles simple, flowers in terminal clusters on leafless shoots — *Tabebuia*
  - Leaves pinnately compound :
    - Leaves unipinnate :
      - Fruits indehiscent, large, woody, gourd-like . — *Kigelia*
      - Fruits dehiscent, not as above
        - Large shrubs ; leaflets toothed; capsules linear — *Tecoma*
        - Trees, leaflets entire, capsules large, cylindric, curved — *Haplophragma*
    - Leaves 2 to 3-pinnate :
      - Leaflets ovate to ovate-lanceolate, larger, staminodes absent, flowers white with long, slender tube — *Millingtonia*

Leaflets [illegible]

[illegible] and [illegible]

[illegible] by tendrils

Tendrils [illegible]

[illegible]

Stamens slightly exserted

Tendrils simple

[illegible] by tendrils

Stamens exserted, flowers orange red

[illegible] flowers orange or [illegible]

[illegible]

Tecomella Seem.

T. undulata (Sm.) Seem. in Ann. & Mag. nat. Hist. (ser. 3) [illegible] 40: 862 [illegible] 2: 271; Blatt. & Mill. Beaut. Ind. Tr. 139, t. 30

Bignonia undulata Sm. Exot. Bot. 1: 35, 1806

Tecoma undulata G. Don, Gen. Syst. 4: 223, 1837; FBI. 4: 378

A large shrub or small tree with drooping branches. Leaves narrowly oblong, margins undulate. Flowers orange-yellow, conspicuous, in corymbose racemes from short lateral branches.

Occurs on the Ridge as a crooked, small tree. Also planted in hedges of gardens. Most of the flowers fall off after opening. A very beautiful tree when in full bloom.

Flowers : April-May

J. K. Maheshwari 667, University Campus

Parmentiera DC.

P. cereifera Seem. Bot. Voy. Herald 187, t. 32, 1853; Hemsl. Bot. Biol. Centr. Am. & Or. 659; Bentham, Trees Calc. 344.

A small, pretty tree. Leaves trifoliolate, petioles narrowly winged. Flowers pretty, whitish or pale pink, on trunk and old branches. Calyx spathaceous.

Native of Panama. Grown in the hedges of gardens.

English name : Candle tree

Flowers : Rainy season

J. K. Maheshwari 1442

Tabebuia Gomez

T. pentaphylla (Linn.) Hemsl. in Biol. Centr. Am. Bot. 2: 495, 1882

Bignonia pentaphylla Linn. Sp. Pl. 870, 1762

Tecoma pentaphylla Juss. Gen. 139, 1789

A medium-sized tree, branching from near the ground. Leaves digitately compound, 3 to 5-foliolate. Leaflets ovate, sharply entire, 9-18 × 6-9 cm. Flowers showy pink, funnel-shaped, in terminal clusters when the shoots become leafless.

Planted in lawns and streets. A very handsome tree when flowers appear on the leafless shoots. The flowers usually fall off without producing fruits.

Flowers : Dec.-March
J. K. Maheshwari 872, University Campus

Kigelia DC

K. pinnata DC. Prodr. 9 : 247, 1845. Parker, For. Fl. : 380, Bentoal Trees Cult. : 346.

A medium-sized, spreading tree. Leaves terrate, imparipinnate. Leaflets 7-9, oblong or obovate, 7.5-18 × 4-7.5 cm., coriaceous, dark green. Flowers claret-coloured in lax, hanging racemes. Fruits 30-45 × 2 cm., woody, gourd-like, hanging on cord-like, several cm. long stalks.

Native of Trop. Africa but thrives favourably in Delhi, producing large number of flowers and fruits. Commonly planted along the main streets as a roadside tree. Also planted in gardens and lawns. It provides excellent shade by its dense crown.

Flowers : May-July
J. K. Maheshwari 869, University Campus

Tecoma Juss. emend. H. B. & K.

T. stans (Linn.) H. B. & K. Nov. Gen. & Sp. 3 : 144, 1818. Santapau in RBSI 16(1) : 217, 1953. Bor & Raizada 37 f. 28, Pl. 9, 10.

Bignonia stans Linn. Sp. Pl. 871, 1763.

Stenolobium stans Seem. in Jour. Bot. 1 : 88, 1863.

A shrub or small tree. Leaves 3 to 5-pinnate. Leaflets 4-10 × 3-4 cm., ovate or lanceolate, acuminate, sharply serrate. Flowers bright yellow. Capsules 12-20 × 0.7 cm. Seeds thin-winged.

Commonly planted in the hedges of gardens for its graceful foliage and beautiful blossoms. Also found as an escape in waste, dry places near gardens and houses and on recently disturbed places. Var. *apiifolia* DC. with leaflets having incisions of a pinnatipartite to pinnatisect type, sometimes unequally bifoliolate or with bipinnate leaves is also grown in garden hedges.

Flowers : July-Jan. Fruits : Feb.-July
J. K. Maheshwari 52

Haplophragma P. Dop

H. adenophyllum (Wall.) P. Dop [illegible] Bull. Soc. Bot. France 72: 890, 925 [illegible] Bignon. 1906

Bignonia adenophylla Wall. Cat. 6502, 1832, nom. nud. P. Dop [illegible] Bull. Soc. Bot. France 72: 890, 1925

Hetero[illegible] adenophyllum Seem. ex Benth. & Hook. f. Gen. P[illegible] Bot. 4: 381

A [illegible] d tree with a dense c[illegible] Leaves [illegible] pinnate [illegible] elliptic [illegible] large [illegible] 30-90 × 3 cm [illegible] Seeds winged.

P[illegible] avenue tree in New Delhi. Also grown [illegible] edges of g[illegible] There is a fine avenue of these trees across the entrance gate to the Indian Agricultural Research Institute. Self sown seedlings are often met in the shade of these trees.

Flowers: Sep.-Nov. Fruits: Oct.-Feb.
J. K. Maheshwari 574 (Queensway)

Millingtonia Linn. f.

M. hortensis Linn. f. Suppl. 291, 1781; Parker For. Fl. 378; Steenis op. cit. 876; Blatt. & Mill. Beauc. Ind. Tr. 106, t. 22.

A tall, erect, handsome tree with narrowly pyramidal crown, branching high above the ground. Bark greyish-black, corky. Leaves 2 to 3-pinnate. Leaflets ovate or ovate-lanceolate, acuminate, sinuate or crenate, 2.5-5 × 2-3 cm., deep green above. Flowers white, fragrant, numerous, pendulous, in terminal panicles. Corolla with long slender tube.

Planted in gardens and avenues for the beautiful foliage and silvery sheen of flowers. However, it is not suitable as a roadside tree owing to its tall and straight habit with vertical branches which provide little shade. Some trees have been planted on the Queen Mary Avenue along with tamarinds and *Terminalia arjuna* Wt. & Arn. The fruits are not produced in the area.

Local name: Neem-chameli
Flowers: Nov.-Dec.
J. K. Maheshwari 525

Jacaranda Juss.

J. mimosifolia D. Don in Bot. Reg. t. 631, 1822 & Edinb. N. Phil. Jour. 266, 1823; Sandwith in Kew Bull. 456, 1953; Blatt. & Mill. op. cit. 93, t. 18.

J. ovalifolia R. Br. in Bot. Mag. t. 2327, 1822; Merr. Enum. 3: 444

[illegible] Rumph. & [illegible]

A [illegible] with a [illegible] [illegible] ground. [illegible] Flowers [illegible] [illegible] Capsule [illegible] hairy. Seeds winged.

Native: Braz. and N. W. Argentina. Commonly [illegible] gardens, avenues and squares. The trees planted on the [illegible] two Secretariat buildings make a beautiful sight in Apr.

Flowers: March-May. Fruits: June-Oct.
J. K. Maheshwari 6-9. Rashtrapati Bhavan Gardens.

Bignonia Linn.

B. ungis-cati Linn. Sp. Pl. 623, 1753 ; Bor & Raiz. 32

A shrub, climbing extensively by its 3-fid. claw-like tendrils with a pair of glaucous, oblong acuminate leaflets. Flowers bright yellow, trumpet-shaped. Fruits about 30 × 1.3 cm, narrowly linear, valves leathery.

A climber of extraordinary beauty when in flower. Commonly grown in gardens on the trellis and around the trunk of trees where it climbs by its 3-fid. hooked tendrils.

Flowers: Jan.-June.
J. K. Maheshwari 670. University Gardens.

Pyrostegia Presl

P. venusta (Ker-Gawl.) Miers in Proc. Roy. Hort. Soc. 3: 188, 1863.
Bignonia venusta Ker-Gawl. in Bot. Reg. 3: t. 249, 1818 ; Bor & Raiz. 30. t. 73. Pl. 6.

An evergreen climbing shrub. Leaflets ovate to ovate-oblong, abruptly acuminate, 2-3. Tendrils tripartite. Flowers vermilion-coloured, tubular, in pendulous corymbs. Corolla lobes reflexed.

One of the most beautiful ornamental climbers. Commonly grown as a creeper along walls, poles and on pergolas. During the winter months, the flowers are produced in such exuberant profusion that it covers the entire surface of plant with a vermilion carpet and hence its common name as 'Golden Shower'. The flowers usually fall off without producing fruits.

Flowers : Jan.-March
J. K. Maheshwari 868, Mughal Gardens

Adenocalymma Mart.

A. nitidum Mart. ex DC. Prodr. 9 : 200, 1845

An extensively spreading climbing shrub. Stems [illegible] black. Leaves digitately [illegible] to 3 [illegible] leaflets [illegible] acuminate, entire, leathery [illegible] Tendrils [illegible] simple. Flowers golden yellow, scented, large [illegible] few-flowered racemes. Corolla trumpet-shaped.

Commonly grown in gardens for its large showy flowers. It grows quickly on trellis and along walls forming a dense screen. The bees are attracted by conspicuous extra floral glands on the calyx. The plant is often wrongly known as *Bignonia chamberlayne* Sims.

Flowers : Summer and rainy seasons.
J. K. Maheshwari, 647, 703.

Tecomaria Spach

† **capensis** (Thunb.) Spach, Hist. Vég. Phan. 9: 237, 1840; Bailey, Man. Cult. Pl. 908.

Bignonia capensis Thunb. Prodr. Pl. Cap. 105, 1800.

Tecoma capensis Lindl. Bot. Reg. t. 1117, 1828.

A climbing shrub. Leaflets 5-9, broad ovate to ovate, serrate. Flowers orange-red, funnel-shaped, in peduncled, terminal racemes. Corolla 5-lobed. Stamens exserted.

Grown along the outer walls of gardens for its ornamental flowers.

Flowers and Fruits : Summer and rainy seasons.
J. K. Maheshwari, in gardens.

Campsis Lour. nom. cons. prop.

Leaflets 9-11, pubescent beneath ; calyx teeth short . . . *C. radicans*
Leaflets 7-9, glabrous beneath ; calyx 5-lobed to the middle . . . *C. grandiflora*

C. radicans (Linn.) Seem. in Jour. Bot. 5: 372, 1867 ; Bailey, op. cit. 903.

Bignonia radicans Linn. Sp. Pl. 624, 1753.

Tecoma radicans Juss. Gen. 139, 1789.

A spreading shrub. Roots arising from the branches. Tendrils absent. Leaflets 9-11, oval to ovate-oblong, 4-6.5 × 2.5-4 cm., acuminate, serrate. Flowers orange-scarlet, in terminal, drooping corymbs. Capsules cylindric-oblong, 7.5-13 × 2.2 cm., beaked. Seeds winged.

Commonly grown in gardens for its large showy flowers, beautiful foliage and climbing habit.

Local name : Latkanja
Flowers : April-June
J. K. Maheshwari 669

C. grandiflora K. Schum. in Engl. & Prantl, Nat. Pflam. 4(3b): 230, 1894 ; Bailey, loc. cit.

Bignonia grandiflora [illegible] Jap. 253, 1784
Tecoma grandiflora [illegible]

A handsome, climbing shrub [illegible] late, serrate. Flowers large [illegible]

Grown as an ornamental [illegible] poles and pergolas for its graceful [illegible] clusters.

Flowers [illegible] Summer season.
J. K. Maheshwari, cultivated in gardens.

77. Pedaliaceae

Flowers yellow; fruits drupaceous, 4-spinous [illegible] *Pedalium*
Flowers pink or rosy; fruits elongate capsular [illegible] *Sesamum*

Pedalium L. [illegible]

P. murex Linn. Syst. 1:123, 1759; Haines, Bot. Bih. & Or. 661.

A diffuse much-branched, spreading or ascending, subscrecent herb to undershrub. Root colour that of turmeric. Leaves ovate, distantly crenate. Two dark violet-coloured glands present at base of petioles and peduncles. Flowers yellow. Corolla lobes unequal. Fruits 4-sided, abruptly narrowed at base, with 4, sharp, horizontal spines.

Occurs in damp, sandy soil near Okhla, Najafgarh and in the undulating tracts near Faridabad. Also found in waste places near habitations and graveyards. Occasional on the Ridge. The fruits are medicinal and sold in the market.

Local name: Vilayti gokhru.
Flowers and Fruits: Aug.-Oct.
J. K. Maheshwari 327.

Sesamum Linn.

S. indicum Linn. Sp. Pl. 634, 1753; FBI 4: 387; FUGP 2: 175; Santapau in RBSI 16(1): 217, 1953.

An erect, hairy, robust or tall herb, up to 1.8 m. tall. Lower leaves often compound, lobed or deeply divided, broad ovate; upper ones undivided, linear-oblong. Flowers pink or rosy, bent, solitary, with conspicuous, vesicular glands at base. Capsules erect, oblong, valvular. Seeds black (on the Delhi Ridge) or white.

Common as well as abundant as a naturalized weed on the Ridge during the monsoon months, but the seeds produced are rather hard. Also cultivated for the useful oil yielded from the seeds. The leaves

[illegible] the [illegible] of the fruits. Both the black-red and white-seeded varieties are known in the area.

Local [illegible]
Flowers and Fruits Aug. Nov.
J. K. Maheshwari 261, 454, Ridge

78. Martyniaceae

Martynia L. sp.

M. annua L. Sp. Pl. 618. 1753.
M. diandra Glox. [illegible] 1785. Hooker Bot. Mag. 8: Or. 662.

A tall rough [illegible] shrub. Rays deep yellow. Leaves large, broad, ate, sticky, long-petioled. Flowers rose, conspicuous, [illegible] terminal glandular-sticky racemes. Bracts and bracteoles persistent. Fruits large, hard, black, with two prominent hooks.

Native of Mexico but has become a part of the natural flora. Common during and after rains on the Ridge in depressed areas and along the roadsides passing through the Ridge of Delhi and New Delhi. It is a conspicuous plant and can be easily identified by its glandular sticky nature, showy rose flowers and the strange fruits. A nectiferous extra-floral nectary occurs at the base of the pedicel.

Flowers Aug. Sept. Fruits Oct.-Nov.
J. K. Maheshwari 295

79. Acanthaceae

Habit climbing (erect in *Thunbergia erecta* only); calyx minute, annular or 10 to 15-toothed . . . *Thunbergia*
Habit erect or prostrate, not climbing
  Scapigerous, stemless herbs; leaves radical . . . *Elytraria*
  Plants with stems and cauline leaves
    Spikes aggregated in radical or subradical globose heads . . . *Lepidagathis*
    Inflorescence not as above
      Corolla without an upper lip, lower lip large, expanded, 3-lobed . . . *Blepharis*
      Corolla bilipped or with 5, subequal lobes
        Corolla distinctly or somewhat bilipped
          Inflorescence spinous . . . *Asteracantha*
          Inflorescence not spinous
            Corolla tube longer; plants cultivated
              Flowers bright red, in spicate racemes; corolla somewhat 2-lipped . . . *Thyrsacanthus*

Flowers in terminal and axillary thyrses ; corolla strongly 2 lipped *Justicia*

Corolla tube small or shorter

Ovules 3-20 in each cell or more

Flowers in lax panicles, often in axillary racemes ; seeds 3-6 in each cell . . . . . *Andrographis*

Flowers in dense, terminal spikes ; seeds 10 or more in each cell *Hygrophila*

Ovules 2-1 in each cell

Flowers pink or rose in trichotomously branched cymes forming panicles . . . . . *Peristrophe*

Flowers in dense spikes

Bracts with scarious margins, 2- or 4-rowed in secund spikes ; if 4-rowed dimorphic *Rungia*

Bracts in cylindric or 4-farious spikes, homomorphic

Herbs ; anther cells, at least the lower with a basal, spur-like appendage . . . . . *Justicia*

Shrubs ; anther cells apiculate, not spurred at base . . . *Adhatoda*

Corolla lobes 5, subequal :

Ovules more than 2 in each cell , capsules 6 or more seeded :

Flowers in capituliform clusters or contracted cymes . . *Hemigraphis*

Flowers larger solitary or few together or cymose

Roots with elongated tubers , flowers in lax, axillary cymes . . . *Ruellia*

Roots without tubers , flowers solitary or in axillary triads or 2-3 superposed . . . . . *Dipteracanthus*

Ovules 2 in each cell ; capsules with 4 or fewer seeds :

Bracts ciliate or ending in a bristle ; flowers yellow, blue-purple or white , calyx 4-partite . . . . . *Barleria*

Bracts not ciliate , flowers deep blue ; calyx 5-lobed . . . . . *Eranthemum*

Thunbergia Retz. nom. cons

An erect undershrub . . . . . *T. erecta*

Climbers or twiners

Flowers solitary or paired. Calyx many-toothed

Flowers in racemes. Calyx entire or fringed

I. erecta (Benth.) T. Anders. in JLS 7 : 18 (1864). Mey. [illegible] 3 : 468; Santapau, Acanth. 6; Bor & Raiz. 109, Pl. 38, [illegible] 39.

Meyenia erecta Benth. in Hook. Nger. 11 : 476, 1844 & [illegible] 54, [illegible] 1 : 50, t. 857.

A glabrous, much-branched undershrub [illegible] ovate-lanceolate [illegible] or repand. Flowers lack [illegible] blue. Calyx hidden by foliaceous bracts. Corolla [illegible]

Grown in the hedges and shrubberies of gardens.

Flowers : Dec.-Jan.

J. K. Maheshwari 848, Rashtrapati Bhavan Campus.

I. laevis Nees in Wall., Pl. As. Rar. 3 : 77, 1832 & in DC. Prodr. 11 : 56, 1847; Bremek. in Verh. K. Nederl. Akad. Wet. II 50 (4) : 5, 1955.

T. fragrans Roxb. var. *laevis* C.B. in FBI 4 : 39, 1884.

T. fragrans auct. (non Roxb.).

A glabrous climber. Leaves triangular-ovate to lanceolate, broadened or subcordate, with a single lobe on each side. Flowers white, solitary, axillary or more. Calyx small, many-toothed. Capsules puberulous, produced into a long beak.

Grown along the trellis and walls.

Flowers and Fruits : Nov.-Feb.

J. K. Maheshwari 855, University Gardens.

T. grandiflora (Roxb. ex Rottl.) Roxb. Hort. Beng. 45, 1814 nom. nud. & Fl. Ind. 3 : 34, 1832; Wt. Ic. t. 877; Santapau, Acanth. 9; Bor & Raiz. 108, Pl. 40.

Flemingia grandiflora Roxb. ex Rottl. in Ges. Naturf. Fr. Neue Schr. 4 : 202, 1803.

A large, woody climber. Leaves thick, fleshy, large, ovate to broad ovate, deep cordate, toothed or lobed. Flowers light or dark blue, large and showy. Bracts large.

Grown as an ornamental on wiry meshes of fences, forms a dense screen by its foliage.

Flowers : Oct.-Dec.

J. K. Maheshwari 537, University Gardens.

Elytraria Michx. nom. cons.

E. acaulis (Linn. f.) Lindau in Engl. & Prantl Nat. Pflam. Nachtr. I : 304, 1897; Santapau, Acanth. 11.

[illegible]

[illegible]

[illegible]

[illegible]

Flowers and Fruits : July Sept
J. K. Maheshwari 203

Lepidagathis Willd.

L. cristata Willd. Sp. Pl. 3 : 400 1800 ; Wt. Ill. 1 : 164, f. 5 & Ic. t. 455 ; Santapau, Acanth. 71

A perennial herb with procumbent branches. Leaves linear or oblong up to 4.7×1 cm. Spikes aggregated at the base in globose radical or subradical heads. Flowers white, spotted with brown and purple. Bracts and calyx lobes spinous-mucronate. Capsules 2-seeded.

Rare in Old Delhi Ridge but common on the Ridge of New Delhi in the shade of trees.

Flowers and Fruits : Oct.–April
J. K. Maheshwari 763

Blepharis Juss.

Leaves 4 in a whorl
  Leaves petiolate, thin, acute — *B. maderaspatensis*
  Leaves subsessile, thick and fleshy, obtuse — *B. molluginifolia*
Leaves in opposite pairs — *B. asperrima*

B. maderaspatensis (Linn.) Heyne ex Roth, Nov. Pl. Sp. 320, 1821 ; Bremek. in Verh. K. Nederl. Akad. Wet. II 45(2) : 10, 1948 ; Santapau, Acanth. 15

Acanthus maderaspatensis Linn. Sp. Pl. 639, 1753.
Blepharis boerhaviaefolia Pers. Syn. 2 : 180, 1807 ; Wt. Ic. t. 458, FBI. 4 : 478 ; FUGP. 2 : 183

A prostrate, spreading or erect pubescent, much branched herb. Leaves thin, in whorls of 3-4, unequal 3-6.5×1-2.2 cm., ovate, elliptic or obovate, entire or minutely denticulate. Flowers blue or pinkish-purple, solitary or 2-3 together. Bracteoles bristly. Capsules 2-seeded.

[illegible]

J. K. Ma[illegible]

A. mollugintoides [illegible]

[illegible]

[illegible]

J. K. M[illegible]

B. asperrima Nees in DC. Prodr. [illegible]

[illegible]

S. K. Mukerjee [illegible] Ridge of De[illegible]

A small herb. Leaves in opposite pairs in each node, [illegible] the [illegible] no broader than *B. mollugintoides* [illegible] Flowers [illegible] blue. Rare.

Flowers. Dec. Jan.

Asteracantha Nees

A. longifolia (Linn.) Nees in Wall. Pl. As. Rar. 3: 96, 832; DC. Prodr. 11: 247; FUGP. 2: 184; Santapau, Acanth. [illegible]

Barleria longifolia Linn. Cent. Pl. 2: 22, 1756 & Amoen. Acad. 4: 320.

Ruellia longifolia Roxb. Fl. Ind. 3: 50. [illegible]

Hygrophila spinosa T. Anders. in Thw. Enum. 225, 1860 & in JLS. 7: 22, 1864; FBI. 4: 408.

An erect, marshy, hispid stout herb. Leaves sessile, whorled, lanceolate, the 2 outer ones longer each with a sharp, straight yellow spine. Flowers bright blue to bluish-purple, showy, in sessile axillary whorls. Capsules linear-oblong.

Occurs along banks of fresh or stagnant water ditches and swampy grounds, mixed with marshy grasses and sedges. The spines persis after leaf fall.

Flowers and Fruits. Oct.-Dec.

J. K. Maheshwari 540, canal near Sarai Rohilla.

Thyrsacanthus Nees

T. strictus Nees in DC. Prodr. 11: 324, 1847; Parker, For. Fl. 361.

A glabrous erect shrub. Leaves elliptic, broadly oblong-ovate to lanceolate, acuminate, entire or undulate, leathery. Flowers bright vermilion, in terminal, spicate racemes, in the axils of bracts. Corolla tube slightly curved and somewhat broadened above.

Grown as an ornamental shrub in the hedges of gardens.

Flowers : March-May.

J. K. Maheshwari 655, Rajghat Campus.

Jacobinia Moric. nom. cons.

J. rinctoria Hemsl. in Bull. Centr. Am. Bot. 2: 522. 1882; Parker, F. B. I. 393.

An erect diffuse shrub. Nodes conspicuously swollen. Leaves ovate or elliptic-lanceolate, acuminate, pale green. Flowers vermilion or deep orange, in terminal and axillary thyrses.

Grown for the beautiful, ornamental flowers.

Flowers : Rainy season.

J. K. Maheshwari 353, University Gardens.

Andrographis Wall.

Leaves glabrous; flowers in lax, panicled racemes, capsules glabrous ..... *A. paniculata*

Leaves hairy; flowers in axillary racemes, capsules hairy ..... *A. echioides*

A. paniculata (Burm. f.) Wall. ex Nees in Wall. Pl. As. Rar. 3: 116, 1832; Wt. Ic. t. 518; FBI. 4: 501; FUGP. 2: 196; Santapau, Acanth. 50.

Justicia paniculata Burm. f. Fl. Ind. 9, 1768.

An erect, glabrous annual, 30-100 cm. tall. Branches sharply 4-angled or winged. Leaves 5-10 × 1.5-2 cm., ovate-lanceolate. Inflorescence a lax, axillary and terminal, unilateral raceme, forming a panicle. Flowers whitish, spotted with rose-purple. Bracts opposite, paired. Capsules tapering at ends.

Spontaneous in moist, shady places. Also cultivated in gardens.

Flowers and Fruits : Oct.-Dec.

J. K. Maheshwari 1114, New Delhi Ridge.

A. echioides (Linn.) Nees in Wall. Pl. As. Rar. 3: 117, 1832; FBI. 4: 505; FUGP. 2: 197; Santapau, Acanth. 51.

Justicia echioides Linn. Sp. Pl. 16, 1753; Roxb. Fl. Ind. 1: 118.

An erect herb, clothed with long, spreading hairs, 25-35 cm. tall. Leaves 4-8 × 1.5-2.5 cm., decussate, ovate-oblong, linear-oblong or subelliptic. Flowers white spotted with purple, erect, unilateral, candelabrum-like, on horizontal, spreading axillary racemes. Calyx linear-lanceolate, ciliate. Capsules elliptic-lanceolate, hairy.

Seen on Ridge but not common. Grows on fertilely alluvial [illegible] sandstones in depressed areas as well as in the [illegible]

Flowers and Fruits : Nov [illegible]
J. K. Maheshwari 122 New Delhi Ridge

Hygrophila R. Br.

H. polysperma (Roxb.) T. Anders. in JLS 9 : 45 1867 [illegible] FUGP 2 : 185. Santapau, Acanth. 19.
Justicia polysperma Roxb. Hort. Beng. 3 1814 [illegible] Nees & Wall. [illegible] : 119, 1832.

A small, procumbent herb, branching and rooting near the base. Leaves small, oblong to ovate. Flowers minute, [illegible] terminal, oblong spikes. Stamens 2, fertile. Capsules [illegible] the tip. Seeds 20 or more, minute, brown.

Common in drying up places near the temporary ponds of [illegible] Gheora.

Flowers and Fruits : March-May
J. K. Maheshwari 1421

Peristrophe Nees

P. bicalyculata (Retz.) Nees in Wall. Pl. As. Rar. 3 : 113 : 83. FBI 4 : 554. F. GP 2 : 210. Santapau, Acanth. 93.
Dianthera bicalyculata Retz. in Vet. Akad. Handl. 297, t. 9, 1785.
Justicia bicalyculata Vahl. Symb. Bot. 2 : 13, 1791.

An erect, much-branched herb or undershrub, 60 cm. or more in tallness. Stems 6-angled. Leaves 5-10 × 3-4.5 cm., ovate, glabrous above. Flowers pink, in trichotomously branched, lax panicles. Corolla bilipped. Stamens 2. Capsules pointed, narrowed into a stalk.

Common throughout in the shades of trees and hedges, often becoming gregarious. Also common as an undergrowth in the fruit orchards.

Local name : Missi
Flowers and Fruits : Sept.-Dec.
J. K. Maheshwari 426, University Campus

Rungia Nees

Bracts dimorphic, flowers small, bright blue, bracts not conspicuously winged — *R. pectinata*
Bracts homomorphic, flowers large, violet, bracts conspicuously winged — *R. repens*

R. pectinata (Linn.) Nees in DC. Prodr. 11 : 470. 1847. Wt. Ic. t. 1547. Santapau, Acanth. 77

Justicia procumbens Anderson [illegible] 4 : 290 [illegible] 59

R. procumbens [illegible] 4 : 550 [illegible] FI GP 2 : 512

R. procumbens var. *[illegible]* C. B. Clarke [illegible]

A [illegible] procumbent annual. Leaves elliptic or oblong-lanceolate [illegible] 4-7 × 1-2 cm. Flowers very small [illegible] one-sided, short spikes. Bracts [illegible] the [illegible] ovate, fertile ones orbicular. Lower anthe[illegible] cells [illegible] Capsules [illegible]

Abundant in moist shady places as a herbaceous undergrowth in Subzimandi and Sarai Rohilla Gardens and other similar waste situations.

Flowers and Fruits : Nov.-Jan.

J. K. Maheshwari 1347

R. repens (Linn.) Nees in Wall. Pl. As. Rar. 3 : 110. 1832 & in DC. Prodr. 11 : 472; Wt. Ic. t. 465; FBI 4 : 549; FI GP 2 : 21; Santapau Acanth. 78.

Justicia repens Linn. Sp. Pl. 15. 1753.

A spreading procumbent herb rooting from the lower nodes. Leaves 3-5 × 1-1.5 cm., lanceolate to oblong-elliptic. Flowers violet or pinkish, in erect terminal, pretty spikes. Bracts broad elliptic, cuspidate, conspicuously winged. Capsules hairy.

Common in small patches on moist situations near river banks, etc. often mixed with grasses.

Flowers and Fruits : Oct.-Dec.

J. K. Maheshwari 856, banks of Jamuna River.

Justicia Linn.

Erect undershrubs; calyx 5-partite . . . . . *J. gendarussa*

Erect or prostrate herbs; calyx lobes 4 . .

Leaves linear to linear-lanceolate, nearly sessile; bracts, bracteoles and sepals obtuse at apex . . . . . *J. quinqueangularis*

Leaves elliptic, oblong or ovate, petiolate; bracts, bracteoles and sepals acute

Sepal margins densely ciliate . . . . . *J. simplex*

Sepal margins glabrous . . . . . *J. diffusa*

J. gendarussa Burm. f. Fl. Ind. 10. 1768; Santapau Acanth. 91.

Gendarussa vulgaris Nees in Wall. Pl. As. Rar. 3 : 104. 1832 & in DC. Prodr. 11 : 410; Wt. Ic. t. 468.

An undershrub 60-120 cm. tall. Leaves lanceolate or linear-lanceolate, glabrous. Flowers white spotted with purple inside, in spikes from the upper axils forming a terminal panicle. Bracts narrow, linear. Cultivated in gardens as a hedge plant.

Flowers : Jan.-May.

J. K. Maheshwari 584, Nicholson Gardens, 857

J. quinquangularis Koen ex Roxb Hort Bengal [illegible]
Fl. Ind. 1 : 133, 1832 . FBI 4 . 536 [illegible]
Acanth 89
Rostellaria quinquangularis Nees [illegible]
& in DC Prodr. 11 : 375 [illegible]
A herb, prostrate or ascending from a prone [illegible]
Leaves linear or lanceolate [illegible] are [illegible]
in terminal spikes [illegible] linear, [illegible]
pointed, glabrous [illegible]
[illegible] fields and waste places during the monsoon months
Flowers and Fruits : April-Oct
I. K Maheshwari 290, Ghuma

J. simplex D. Don. Prodr Fl. Nepal. 118 1825 FBI. 4 539 FUGP. 2 : 210 Santapau Acanth. 89.
An erect, slender herb Internodes long, ribbed. Leaves [illegible] cm ovate to elliptic-oblong. Flowers pale purple or white [illegible] axillary and terminal spikes Bracts hairy nearly [illegible] margins [illegible] Sepal margins densely [illegible] at the top Capsules oblong, [illegible]
Common on the Ridge as well as in other parts during the monsoon and winter months Used as a medicinal plant. The powdered roots are used against snake bite

Local name . Ooga
Flowers and Fruits . Aug.-Dec
J K. Maheshwari 326; 345, Hauz Khas

J. diffusa Willd Sp Pl. 1 . 87, 1797, FBI. 4 : 538; FUGP. 2 209 Santapau, Acanth. 87
Rostellaria diffusa Nees in Wall Pl As Rar 3 100 1832
An erect, much-branched, shadow-rooted herb Leaves 2.5-5 × 1.2-1.7 cm , ovate to elliptic-lanceolate Flowers pink or pale purple in erect, axillary and terminal spikes. Sepals not hairy Lower anther cells spurred. Capsules oblong, glabrous.
A common weed in the fields of rainy season crops

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1266, fields near Hindan River

Adhatoda Nees

A. vasica Nees in Wall Pl As Rar 3 103, 1832 & in DC Prodr 11 387 FBI 4 540 , Parker, For F. 391 Santapau Acanth 92
Justicia adhatoda Linn Sp Pl 15. 1753 Roxb Fl Ind 1 126 FUGP 2 : 207
A diffuse, branched, evergreen shrub Internodes short. Leaves up

[illegible] 30 [illegible] cm [illegible] ovate or [illegible] lanceolate [illegible] Flowers [illegible] [illegible] spikes [illegible] [illegible] branches [illegible] conspicuous [illegible] 5–0.8 cm [illegible] [illegible] Seeds [illegible]

[illegible] as well as abundant, often [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Also planted near habitations and [illegible] [illegible] [illegible] stuck out [illegible] sweet sap from the flowers [illegible] fever. The leaves are held sacred by the people [illegible] [illegible] cough. Goats do not like this plant.

Local name : Bansa ; Arusa ; Phabosa ; Bekad ; Basuti
Flowers and Fruits : Dec.-April
J. K. Maheshwari 860, Ridge

Hemigraphis Nees

H. hirta T. Anders. in JLS. 9 : 462, 1867 ; FBI. 4 : 422, FLCP. 2 : 19
Ruellia hirta Vah. Symb. bot. 3 : 84, t. 67. 1794. Roxb. F. Ind. 3 : 46

A prostrate, densely hairy, much-branched herb with erect branches. Leaves 2.4–1.7–2 cm., ovate, crenate. Flowers pale violet to purple-pink, ephemeral, 2.2–1.3 cm., in few-flowered heads. Corolla tube ventricose. Capsules linear, glabrous.

Common in the shades of hedges around fruit orchards, along the slopes of raised embankments, along canal banks and waste places near ditches, often mixed with grasses and in these localities, forming a carpet of its plants.

Flowers and Fruits : April-June
J. K. Maheshwari 1022, Karnal Road

Ruellia Linn. emend. Bremek.

R. tuberosa Linn. Sp. Pl. 635, 1753 ; Bremek. in verh. K. Nederl. Akad. Wet. II 45(1) : 11, 1948 ; Santapau, Acanth. 23.

An erect herb, 30 cm. or more high, with a number of slender, elongated root tubers. Stems stout, quadrangular. Leaves ascending, oblong, shining, narrowed at the base, entire to subundulate. Flowers blue-violet, paired, in the axils of leaves, ephemeral. Corolla tube abruptly narrowed below. Capsules linear.

Introduced. Native of Trop. America. Grown in gardens. Also spontaneous in hedges and waste places near gardens.

Flowers and Fruits : Rainy season
J. K. Maheshwari 847

Dipteracanthus Nees-emend. Bremek.

After a revision of the genus *Ruellia* by C. E. B. Bremekamp and N.E.

Nagapuga Bremekamp (Verh. K. Nederl. [illegible] 1939, 1948) the species [illegible] assigned to the genus [illegible] is represented [illegible] subspecies.

Habit prostrate or [illegible] stems and [illegible]

Habit erect or d[illegible] stems [illegible]

Flowers pale purple [illegible]

Flowers white [illegible]

D. prostratus (Poir.) Nees in Wall. Pl. A. Rar. [illegible] 1832; [illegible] 11: 24. Bremek. op. [illegible] 16. Santapau, Acanth. 74.

Ruellia prostrata Poir. in Lam. Encycl. 6: 309. 1804. F.B.I. 4: [illegible]

Dipteracanthus decretus Nees in Wall. Pl. As. Rar. 3: 85. 1832.

Ruellia prostrata Poir. var. *decreta* C.B. in F.B.I. 4: 417. 1884. [illegible] 2: 188.

A diffuse or straggling stout herb. 15-45 cm. long. Internodes terete below, angular above. Leaves 2.5-7.5 × 1.2-3.5 cm., [illegible] subsessile, entire, deep green above, pale beneath. Flowers [illegible] solitary or few together. Corolla caducous, tube funnel-shaped above. Capsules 2-3.5 × 0.5 cm., clavate, pointed, pubescent. Seeds glabrous, brown.

Abundant on unused lawns and waste places in Roshanara Garden, common in other parts in the shade of fence of gardens and neighbouring waste places, often mixed with grasses.

Flowers and Fruits : June-Sept.

J. K. Maheshwari 99, 875

D. patulus (Jacq.) Nees, loc. cit., Wight Ic. t. 1905. Santapau, Acanth. 24.

Ruellia patula Jacq. Misc. Bot. 2: 358. 1781; F.B.I. 4: 412; F.U.C.P. 2: 188.

A hoary-pubescent, erect or straggling, much-branched undershrub. Leaves ovate to elliptic, obtuse, hairy. Flowers pale purple, solitary or 2-3 together, cylindric-funneliform. Capsules clavate, glabrous.

Common on the Ridge in depressions and also in other parts of the district.

Flowers and Fruits : Summer and rainy seasons.

J. K. Maheshwari 1184

D. suffruticosus (Roxb.) Voigt. Hort. Suburb. Calc. 483. 1845; Santapau in Ind. For. 79: 322. 1953.

Ruellia suffruticosa Roxb. Fl. Ind. 3: 53. 1832; F.B.I. 4: 417; F.U.C.P. 2: 188.

An erect, pubescent, straggling undershrub. Internodes long. Leaves elliptic, obovate or oblanceolate, villous with white hairs on both

surfaces especially on the nerves and veins beneath, margins ciliate. Flowers white, solitary, axillary or more. Corolla and style caducous. Capsules glabrous.

Found in some parts of the Ridge, becoming abundant in some patches only.

Flowers and Fruits : Rainy season.

Berberis Linn.

Plants armed, flowers orange-yellow	*B. vulgaris*
Plants unarmed, flowers blue-purple or white	*B. cretata*

B. vulgaris Linn. Sp. Pl. 636, 1753; Wt. Ic. t. 452; FBI. 4 : 482; Fl. GP. 2 : 200; Parker, For. Fl. 382; Santapau, Acanth. 57.

A bushy, prickly undershrub, branching from base. Stems grey-white. Spines 3-4 or more in the axil of leaves, white. Leaves about 10-15 cm., ovate to elliptic, tapering at ends. Flowers orange-yellow in terminal spikes. Calyx lobes spine-tipped. Capsules black, pointed, larger than calyx.

Occurs on the Ridge in shady, protected areas. Also found in waste places near gardens. Used as a hedge plant. The plant extract is believed to be as bitter as quinine and is used in the cure of whooping cough and tuberculosis.

Local name : Kara bansa, Pisbansa.
Flowers : Oct.-March. Fruits : March-June.
J. K. Maheshwari 541, Ridge ; 757, Lodi Gardens.

B. cretata Linn. Sp. Pl. 636, 1753; FBI. 4 : 488; FUGP. 2 : 201, in part; Merr. Enum. 3 : 479; Santapau, Acanth. 59.

An erect or diffuse undershrub. Leaves elliptic-oblong, abruptly tapering towards the base, glaucous beneath. Flowers blue-purple, in axillary and terminal, crowded, short racemes. Bracteoles shorter than the outer, spinous sepals. Capsules ellipsoid, 4-seeded.

A new record from Delhi State, has become naturalized in shady places of gardens and waste grounds. Also planted in garden hedges for its ornamental flowers and foliage.

Flowers and Fruits : Oct.-Dec.
J. K. Maheshwari 859, Roshanara Gardens.

B. cretata Linn. var. **dichotoma** (Roxb.) Prain, Beng. Pl. 812, 1903 ; Santapau, Acanth. 59.

B. dichotoma Roxb. Fl. Ind. 3 : 39, 1832.

Differs from the typical variety by its white flowers.

A new record from the Upper Gangetic Plain. Occurs as commonly as the typical variety, in a naturalized state in moist, shady places of gardens and waste places.

Local name : Safed chosta
Flowers : Dec.-Jan
J. K. Maheshwari 518

Eranthemum Linn

E. nervosum (Vahl) R. Br. Prodr. 1 : 477. 1810. Brenan, Rev. Fl. Bot. Néerl. 35 : 136, t. 14E, 1938. Santapau, Acanth. 35.
Justicia nervosa Vahl, Enum. 1 : 164. 1804. Br. M. R. t. 1559.
Dasylacanthus nervosus T. Anders. in J. L. S. 7 : 487. 1867.

An erect, stout shrub, 1-2 m. or more in tallness. Leaves ovate-elliptic, leathery, 25-50 × 6-8.5 cm. prominently pronate-veined. Flowers deep blue in axillary and terminal spikes, with appressed [illegible] veined, foliar bracts.

Grown as an ornamental in the shrubberies and hedges for [illegible] fusion of azure-blue beautiful flowers.

Flowers : Nov.-April
J. K. Maheshwari 668

Crossandra infundibuliformis (Linn.) Nees in Wall. Pl. As. Rar. 3 : 98. 1832 & in DC. Prodr. 11 : 280. Santapau, Acanth. 55.
Justicia infundibuliformis Linn. Sp. Pl. 21. 1753.
Crossandra undulaefolia Salisb. Parad. Lond. t. 12. 1805.
C. axillaris Nees, loc. cit., Wt. Ic. t. 460.

A small shrub. Leaves ovate or lanceolate, tapering at end. Flowers orange or orange-scarlet, in linear-oblong spikes with imbricate bracts.

Grown as an ornamental.

Flowers : April-Nov.
J. K. Maheshwari 858

80. Verbenaceae

Inflorescence spicate, centripetal, the lowest flowers opening first .
- Flowers in short, capitate, ovoid or cylindric spikes, calyx small.
  - Creeping herbs ; fruits hard, dry . . . . . *Phyla*
  - Shrubs or undershrubs; drupes fleshy . . *Lantana*
- Flowers in elongate, lax or dense spikes or racemes
  - Habit of liana type, flowers blue or pale violet *Petrea*
  - Habit upright :
    - Trees; flowers white, in long, drooping racemes . . . . . *Citharexylum*
    - Herbs, undershrubs or shrubs :
      - Flowers sessile, pale white, pinkish or lilac
        - Erect or decumbent herbs, calyx not ribbed, pyrenes 4 *Verbena*

Much-branched undershrubs calyx strongly ribbed pyrenes 2 . . . . . *Rotheca*
Flowers pedicellate, in loose, panicled racemes *Duranta*

Inflorescence cymose, centrifugal, the end flower opening first
Fruits dehiscent capsule or capsular
Flowers white with an orange tube in small heads arranged in terminal trichotomous cymes *Nyctanthes*
Flowers pale violet or light mauve, in dense, axillary cymes forming thyrses *Caryopteris*
Fruits indehiscent, subdrupaceous to drupaceous or a drupe with 1-4 pyrenes .
Flowers actinomorphic: stamens equal
Flowers white calyx accrescent and becoming bladdery in fruit: trees *Tectona*
Flowers pink, rose or red, calyx not enlarging in fruit, shrubs *Callicarpa*
Flowers zygomorphic, stamens didynamous :
Leaves digitately compound *Vitex*
Leaves simple
Drupes with 1-4-celled pyrene
Flowers small, white, drupes small . . . *Premna*
Flowers large, yellow, drupes larger *Gmelina*
Drupes with 4 pyrenes or drupels
Corolla tube slender; drupes exserted, usually succulent . . . . . *Clerodendrum*
Corolla tube widened upwards, drupes dry, included in red-coloured calyx *Holmskioldia*

Phyla Lour

P. nodiflora (Linn.) Greene in Pittonia 4 : 46, 1899; Santapau in RBSI 16(1) : 237, 1953.

Verbena nodiflora Linn, Sp Pl. 20, 1753.

Lippia nodiflora A Rich. in Mich Fl. Bor.-Amer 2 : 15, 1803 ; FBI 4 : 563; FUGP 2 : 217

A creeping, much-branched, perennial herb, rooting at the nodes Leaves 2-3.5 × 1-2 cm., spathulate to obovate, cuneate and entire below serrate above Flowers pale pink, small, sessile, numerous, in dense, globose, long-peduncled, axillary, 1.3-2.5 × 0.6-1 cm. heads, elongating later into oblong spikes Pyrenes 2, dry, 1-seeded, plano-convex.

Common in moist places along canal edges, banks of Jamuna River, in moist grassy lawns and other similar situations, often gregarious, forming a carpet of its own at some places Very common in the Khadar tract

Local name : Bukkan, Bakanbu [illegible]
Flowers and Fruits : April-Aug
J. K. Maheshwari 95, Roshanara Gardens

Lantana Linn

Plants armed with recurved prickles. Flowers [illegible] orange coloured or pink
Plants unarmed. Flowers white [illegible]

L. camara Linn. var. **aculeata** (Linn.) Moldenke in Torreya [illegible]
L. aculeata Linn. Sp. Pl. 627, 1753.
L. camara auct. (non Linn.).

The real *L. camara* Linn. is a spineless shrub. The plant [illegible] gardens of Delhi is *L. aculeata* Linn. or the var. *aculeata* of M[illegible]

A straggling or climbing aromatic shrub, 1.2-2.4 m [illegible] prickles on the branches. Leaves 2.5-7.5 × 2.5-5 cm., [illegible] lanceolate, crenate-serrate, scabrid. Flowers vari-coloured, generally orange-coloured or pink, in short, pedunculate, capitate spikes. Bracts much exceeding calyx. Fruits drupaceous, black, shining. Perennial.

Originally introduced from Trop. America as a garden plant, now common in hedges and lawns of public and private gardens. Though a very troublesome pest in other parts of India, it is not so in Delhi.

Flowers : June-Sept. Fruits : Dec.-Feb.
J. K. Maheshwari 1207, Nicholson Gardens

L. indica Roxb. Hort. Beng. 46. 1814, nom. nud. & Fl. Ind. 3. 89, 1832; FBI. 4 : 562, FUGP. 2 : 216; Parker, For. Fl. 396.

A woody shrub. Branches 4-angular, long and rambling. Leaves 3-7 × 2.5-4 cm., ternate, unequal, ovate, crenate-serrate, white-pubescent beneath. Flowers pure white, scentless, very slightly pale purple, in axillary, peduncled, close heads or 1.2-2 cm. long spikes, elongating in fruit. Lowest bracts forming involucre. Drupes purple, enclosed in thin, transparent calyx.

Found on the Ridge in the shades of shrubs and also in the hedges of gardens. The children eat the fruit.

Local name : Mewa ka ped, Tulsidal
Flowers and Fruits : Sept.-Dec.
J. K. Maheshwari 498, Najafgarh

Petrea Linn.

P. volubilis Linn. Sp. Pl. 626, 1753; Merr. Enum. 3. 381; Bor & Raizada 141, Pl. 54.

A slender, much-branched shrub or liana. Stems ash-coloured, [illegible]ticellate. Leaves variable, ovate to elliptic, 8-15 × 5-6 cm., harsh,

rough. Flowers blue or pale violet, star like, in terminal, long racemes. Calyx petaloid, rigid.

Native of Trop. America. A handsome plant when in flower. Grown in gardens along walls, pergolas and poles for its blossoms borne in elegant, wreath-like clusters.

Flowers : Oct.-April.
J. K. Maheshwari 528.

Cliburexylon Linn.

C. spicatum Linn. Sp. Pl. 625. 1753. Parker. For. Fl. 405.

A small tree. Leaves ovate, elliptic or lanceolate, glossy, tapering at ends, subcoriaceous. Flowers white, fragrant, in long, drooping racemes.

Planted in the lawns of gardens along the side-lines of New Delhi and in hedges.

English name: Fiddle wood.
Flowers : Sept.-Nov.
J. K. Maheshwari 466, Talkatora Gardens.

Verbena Linn.

Erect or decumbent herbs, leaves pinnatifidly lobed, flowers pale pink in spikes . . . *V. officinalis*
Prostrate perennials, leaves dissected into linear segments, flowers lilac-purple, in dense heads elongating in fruits . . . *V. bipinnatifida*

V. officinalis Linn. Sp. Pl. 20, 1753; FBI. 4 : 565; FUGP. 2 : 218.

An erect or decumbent, branching herb, 30-100 cm. tall. Young branches with minute, sparse prickles. Leaves 5-10 x 1.5-2.5 cm., variously lobed, scabrous, lower ones pinnatifid or coarsely toothed, upper ones usually deep dentate or tripartite. Flowers pale pink, in dense, bracteate spikes. Pyrenes dry, subcylindric, smooth.

Common along canal banks, near temporary puddles and stagnant water channels.

Flowers and Fruits: April-Oct.
J. K. Maheshwari 429, Najafgarh Canal Banks.

V. bipinnatifida Schau. in DC. Prodr. 11 : 553, 1847; Bailey, Man. Cult. Pl. 840.

A prostrate, hirsute, perennial herb with ascending stems. Leaves divided into linear divisions, long-petiolate. Flowers lilac-purple, in dense heads elongating in fruits. Bracts equalling the sepals. Calyx lobes setaceous.

Cultivated in garden beds and along slopes of private roads, forming a thick carpet and beautifying the landscape, often met as an escape in waste places near gardens.

Flowers and Fruits : Winter season
J. K. Maheshwari 241

Bouchea Cham. [illegible]

B. marrubiifolia Schauer in DC. Prodr. 11 : 558, 1847 ; Wt. Ic. t. [illegible]
FBI 4 : 564

An erect, woody, hoary-pubescent robust herb or undershrub, much branched from base, 60 cm. or so in tallness. Leaves ovate [illegible] oblong to oblong, 2-3.5 × 1.4-2 cm. coarsely toothed, serratures deep [illegible] above. Flowers dirty white or cream-coloured, in erect, terminal [illegible] spread up, unequal. Fruits linear oblong, black, dry [illegible] Occurs in isolated patches on the Old Delhi Ridge [illegible] close to the Water Reservoir, near Gurukul along railway lines [illegible] Delhi to Faridabad and on the bare hill-tops of Anand Parbat.

Flowers and Fruits : Aug.-Dec.
J. K. Maheshwari 1216; 1241

Duranta Linn.

D. repens Linn. Sp. Pl. 637, 1753 ; Merr. Enum. 3 : 38 ; Bailey Man. C. Pl. 843

D. plumieri Jacq. Select. Am. 186, t. 176, 1763

An erect, evergreen shrub with spinose or spineless branches. Leaves obovate, elliptic or oblong-lanceolate, entire or serrulate with minute surface glands on the lower surface. Flowers violet, in axillary and terminal racemes, borne in profusion at the ends of branches, pedicelled. Berries small, orange, exocarp fleshy, endocarp stony. Pyrenes 4.

Introduced. Native of S. America and W. Indies. Very commonly planted as a hedge plant around gardens, grows very readily from cuttings.

Flowers and Fruits : Most part of the year
J. K. Maheshwari 17

Nyctanthes Linn.

This genus, so far regarded as a member of the *Oleaceae* has recently been transferred by H. K. Airy Shaw (in Kew Bull. 272, 1952) to the family *Verbenaceae* under a new subfamily *Nyctanthoideae* Airy Shaw. Stant (in Kew Bull. 273-276, 1952) considers several morphological and anatomical features to differ from those in the *Oleaceae* but in favour of a Verbenaceous affinity.

N. arbor-tristis Linn. Sp. Pl. 6, 1753, FBI 3 : 603, FLGP 2 : 24

An erect shrub or small tree. Branches 4-angular. Leaves 10-15 × 5-6.5 cm. ovate, acuminate, very scabrous, with unicellular warty tr-

chonies and glandular hairs. Flowers white with orange or [illegible] in small heads disposed in terminal [illegible] Capsules [illegible] 2 – 2.2 cm, compressed orbicular, separating into 2 flat [illegible] pyrenes.

Commonly planted in hedges of gardens and temple [illegible] for its delightfully fragrant blossoms. The flowers [illegible] off early next morning. They are collected from the gardens and made into garlands and used for worship. An orange coloured dye is also extracted from the corolla tubes.

Local name : Harsinghar
Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 472, Talkatora Gardens.

Caryopteris Bunge

C. wallichiana Schau. in DC. Prodr. 11 : 625 (1847); Brandis, For. Fl. 370; FBI 4 : 597; FUGP 2 : 228; Parker, For. Fl. 404.

An erect shrub. Leaves elliptic to lanceolate, acuminate, toothed, cuneate at base. Flowers pale violet, light mauve or white, sweet-scented, in dense, axillary cymes forming thyrses at the ends of branches. Capsules globose, pubescent.

A garden shrub planted in the hedges of gardens for its profusely produced, sweet-smelling flowers and dense foliage.

Flowers : Jan.-April
J. K. Maheshwari 646, University Campus, 1386

Tectona Linn. f. nom. cons.

T. grandis Linn. f. Suppl. 151 (1781); Parker, For. Fl. 405; Merr. Enum. 3 : 389; FBI 4 : 570; FUGP 2 : 220.

A large deciduous tree. Leaves large, elliptic or obovate, entire, cuneate at base, tawny-tomentose below. Flowers numerous, rotate-form, only a few fertile, in large, dichoto- or trichotomously branched, terminal panicles. Drupes globose, densely indumentose, enclosed by the inflated calyx.

Some trees have been planted in the compound of Rashtrapati Bhavan, where they flower and fruit abundantly. There is also one tree in the corner of the Square near Kashmere Gate.

Local name : Sagwan
Flowers : Sept.-Oct. Fruits : Dec.
J. K. Maheshwari 582 : 1168

Callicarpa Linn.

Leaves densely stellate-woolly beneath; corolla glabrous outside or with some hairs . . . . . C. macrophylla

Leaves thinly stellate-pubescent [illegible]

C. **microphylla** Wall. Symb. Bot. 3 [illegible] FUGP 2 : 219 ; Parker, For [illegible]

An erect shrub [illegible] and inflorescences dense stellate-wooly [illegible] ovate, elliptic or ovate-lanceolate [illegible] rose-coloured, crowded [illegible]

Cultivated as a hedge plant in gardens.

Flowers : June-Sept.

J. K. Maheshwari 218 Talkatora Gardens

C. **longifolia** Lamk. Encyc. 563 ; [illegible] 1785 ; FBI 4 [illegible]

An erect glabrous shrub. Young parts stellate-woolly [illegible] Leaves lanceolate, acuminate, serrulate, tapering at ends, thin, stellate-pubescent beneath. Flowers pink, in dichotomously branched, dense cymes. Drupes globose, white.

Grown as a hedge plant in gardens.

Flowers : Sept.-Nov. Fruits : Jan.-March

J. K. Maheshwari 663 Talkatora Gardens

Vitex Linn.

Flower clusters lax, in a widely spreading panicle ; leaflets mostly broader — *V. negundo*

Flower clusters dense, in a spike-like inflorescence ; leaflets lanceolate — *V. agnus-castus*

V. negundo Linn. Sp. Pl. 638. 1753 ; FBI 4 : 583 ; FUGP 2 : 224 ; Merr. Enum. 3 : 394 ; Parker, For. Fl. 394.

A shrub or small tree. Branchlets quadrangular, densely white-tomentose. Leaflets 3-5, 10-17 × 2.5-4 cm., petiolulate, lanceolate, acuminate, white-tomentose beneath. Flowers lavender to blue, in loose clusters, arranged in a large terminal panicle. Drupes black.

Planted in gardens, lawns and along railway lines. Common in the Bangar tract on raised bunds along the roads. The warmed leaves are applied to painful and rheumatic swellings ; the macerated ones are used as cooling medicine on the forehead in headache.

Local name : Sambhalu

Flowers : Major part of the year

J. K. Maheshwari 118 ; 689

V. agnus-castus Linn. Sp. Pl. 638. 1753 ; Bailey, Man. Cult. Pl. 843.

A strongly aromatic shrub, woolly-tomentose throughout. Leaves digitate, long-petiolate, velvety. Leaflets 5-7, lanceolate, 4-10 × 0.65-

1.3 cm., entire. Flowers pale purple or violet, in interrupted spikes or groups of several. Stamens exserted. Drupes small, globose, exceeding the calyx, 4-celled.

Grown in shrubberies of parks and gardens.

Flowers: June-Sept.

J. K. Maheshwari 220, Tughlaqabad Gardens.

Prunus Linn.

P. mucronata Roxb. Hort. Beng. 95, 1814, nom. nud.; & Fl. Ind. 3: 90, 1832; Royle Ill. 299; Brandis, For. Fl. 366; FUGP 2: 227; Parker, For. Fl. 399.

P. latifolia var. *mucronata* Cl. in FBI 4: 578, 1885.

A large shrub to small or medium sized tree. Trunk curved. Leaves 7.5-15 × 5-7 cm., subcoriaceous, broad ovate, shortly acuminate, entire or undulate, pubescent along the midrib and nerves, deep green above, pale beneath. Corymbs broad, 5 × 5-8 cm., usually terminating short leafy branchlets. Flowers greenish-white. Calyx accrescent. Corolla bilipped. Anthers black. Fruits globose, dark purple, endocarp hard, globose, 4-celled.

A few trees and shrubs have been planted on the outskirts of Sara Rohila Gardens, growing along the unmetalled road, where they flower and fruit annually.

Flowers and Fruits: July-Sept.

J. K. Maheshwari 1017, near Bagh Peeperwala (Sara. Rohilla).

Gmelina Linn.

Unarmed, small trees; bracts small — *G. arborea*
Spinous shrubs, bracts large, coloured — *G. philippensis*

G. arborea Roxb. Hort. Beng. 46, 1814, nom. nud.; & Pl. Cor. 3: 42, Pl. 246, 1815; FBI 4: 581; FUGP 2: 220; Parker, For. Fl. 397.

A small, deciduous tree. Young parts clothed with pale yellow tomentum. Leaves broad ovate, acuminate, base cuneate. Flowers brownish-yellow, in paniculate cymes. Drupes pyriform or obovoid, smooth, endocarp bony.

Planted in the lawns of gardens. Most of the flowers fall off and only a few develop fruits. The tree does not thrive well in the area.

Fruits: March-May.

J. K. Maheshwari 1031, Lodi Gardens.

G. philippensis Cham. in Linnaea 7: 109, 1832; Merr. Enum. 3: 399; Bor. Man. Ind. For. Bot. 302.

G. hystrix Schult. ex Kurz in JASB 39: 81, 1870.

A large or medium-sized, straggling, spinous shrub. Branches len-

ocellate. Branchlets spinescent. Leaves [illegible] or rhomboid at ends, crenate or distantly [illegible] with surface glands. Flowers yellow to [illegible] able from pedicels protected by large [illegible] curiously inflated above.

Native of Philippine Islands. Planted in the hedges or out [illegible] private gardens and parks.

Flowers : April-Aug.

J. K. Maheshwari 653, Rajghat Garden.

Clerodendrum Linn.

Corolla tube less than 5 cm. long
- Flowers white, rarely pink ; cymes axillary and [illegible]
  - Leaves ovate, elliptic to obovate, subfleshy ; flowers in [illegible] 3-flowered cymes — *C. inerme*
  - Leaves ovate or rhomboid, thin ; flowers in dich[illegible] forming a rounded panicle — *C. philippinum*
- Flowers not white ; cymes terminal
  - Habit erect ; flowers pink, fragrant — *C. fragrans*
  - Habit climbing ; flowers crimson — *C. splendens*

Corolla tube more than 5 cm. long ; flowers white — *C. indicum*

C. inerme (Linn.) Gaertn. Fruct. 1 : 271, 1788 ; Merr. Enum. 3 : 40 ; Bor & Raiz 146, f. 92.

Volkameria inermis Linn. Sp. Pl. 637, 1753.

A straggling, subscandent or trailing shrub. Leaves variable, ovate elliptic, elliptic-oblong to obovate, glabrous, subfleshy. Flowers white with purple-red filaments, in axillary, 3-flowered cymes from uppermost leaves. Corolla tube slender. Drupes pyriform, subtended at base by accrescent calyx.

Commonly cultivated as hedge plant along foot-paths in lawns and gardens. Also grown as a trailing shrub to cover the stony circles and dirty areas of gardens. The leaves are considerably variable in size depending upon the habitat.

Flowers : July-Nov.

J. K. Maheshwari 413 ; 1173 ; 1285.

C. philippinum Linn. f. Suppl. 292, 1781 ; FUGP 2 : 225 ; Bor & Raiz 154, f. 98.

A large shrub or small tree. Bark light brown with dull white lenticels. Leaves ovate or subrhomboid, crenate, wavy or entire. Flowers white in terminal and axillary, dichotomous cymes, forming a rounded panicle. Drupes black, wrinkled ; endocarp crustaceous. Seeds oblong, white.

Occurs on the Ridge [illegible] Also planted in [illegible] Fuel, and other shrubs. [illegible] The flowers are often attacked by insects [illegible] of [illegible] [illegible] corolla tubes.

Local name: Ari
Flowers: Aug.-Nov.
J. K. Maheshwari 787, Ridge.

4. **Ipomoea** Verl. Jard. Mag. [illegible] 70, 1804; Bailey, Man. Cult. Pl. 845; Bor. & Ruiz. 49, 1, 94.

An erect, sweet smelling shrub or undershrub. Leaves 15 [illegible] or more broad, ovate, coarsely toothed, truncate or cordate, with extra floral glands at base of lamina. Flowers pink, very fragrant, in terminal compact, showy corymbs.

Grown as an ornamental in public and private gardens and in fruit orchards, for its very fragrant flowers.

Local name: Ardaaa
Flowers: Sept.-Oct.
J. K. Maheshwari 468, Lal Kotora Gardens.

C. splendens G. Don in Edinb. N. Phil. Jour. 11: 349, 1824; Bailey, Stand. Cycl. Hort. 1: 800.

A climbing shrub. Leaves oblong-orbicular to suborbicular, entire, coriaceous, dark green above, cordate, acuminate. Flowers crimson in dense, many-flowered, terminal, showy cymes. Drupes black.

Grown along the trellis and walls of gardens for its gorgeous blossoms and dense screen of foliage.

Flowers: Jan.-Feb. Fruits: March-April.
J. K. Maheshwari 1192, University Gardens.

C. indicum (Linn.) Kuntze. Rev. Gen. 586, 1891; Bailey, Man. Cult. Pl. 845.

Siphonanthus indica Linn. Sp. Pl. 109, 1753.

Cyrtodendrum siphonanthus R. Br. in Ait. f. Hort. Kew. 4: 65, 1812; Bor. & Ruiz. 144.

A tall, glabrous shrub, 1.2-1.8 m. high. Stems hollow, ridged. Leaves usually 4-nate, glabrous, 12.5-20 × 2.5 cm., narrowly lanceolate, tapering at base, entire, sinuate or lobulate. Panicles lax, terminal, [illegible]. Flowers white. Bracts reddish when young. Calyx accrescent. Corolla narrowly funnel-shaped, tube 8 cm. or more in length. Nutlets 4, in a persistent enlarged calyx.

Common in the fruit orchards as a shrubby undergrowth. In Gulab Bagh, near Sabzimandi, it grows abundantly in some parts beneath the trees.

Flowers : Oct

J. K. Maheshwari 366 Azadpur Garden

Holmskioldia Retz

H. sanguinea Retz. Obs. 6. 37. 1791. Hooker [illegible] 4. 338. Roxb. & Roxb. [illegible]

A [illegible] or straggling woody shrub. [illegible] ovate [illegible] 4-8 cm. Flowers red, orange or dark vermilion [illegible] pedicellate [illegible]. Calyx accrescent, petals [illegible]

A garden shrub, cultivated in hedges for its show [illegible]

Flowers : Jan.-March

K. Maheshwari 587 Tarkatora Gardens

Stachytarpheta jamaicensis (Linn.) Vahl Enum. 1. 206. [illegible] M. Enum. 3. 38

Verbena jamaicensis Linn. Sp. Pl. 19, 1753

Stachytarpheta indica Vahl Enum. 1. 206, 1804, FBI 4. 564, PUGP. 2. 229

An erect, glabrous undershrub. Leaves ovate to [illegible] Flowers blue, pretty, in long, terminal, bracteate spikes

Planted in gardens

Flowers and Fruits : Aug.-Feb

J. K. Maheshwari 362

81. Labiatae (Lamiaceae)

Corolla with 4, nearly equal lobes . . . . . *Mentha*

Corolla obviously bilipped

Stamens 4, all perfect, declinate ; anther cells confluent

Lower lip of corolla not longer than the upper lip

Corolla tube short ; lower lip flat ; stigma bifurcated *Ocimum*

Corolla tube long ; lower lip concave ; stigma not bifurcated *Orthosiphon*

Lower lip of corolla longer than the upper lip ; flowers [illegible] *Leucas*

Stamens erect, spreading or ascending :

Perfect stamens 2 . . . . . *Salvia*

Perfect stamens 4, didynamous

Upper pair of stamens with 1-celled anthers ; flowers dark [illegible] *Ocimum*

Anthers all 2-celled :

Calyx mouth oblique, 6 to 10-toothed ; flowers white [illegible]

Calyx subbilabiate, 5-toothed ; flowers bluish-purple
Nepeta

Mentha Linn

M. spicata Linn Sp. Pl 576, 1753 ; Bailey Man Cult P 863
M. viridis Linn. Sp. Pl 804, 1763

An aromatic perennial glabrous, ascending herb Leaves 4-5 × 3 cm sessile, ovate-lanceolate sharply serrate Flowers white in many-flowered whorls arranged in 6 × 1 cm spikes

Cultivated in gardens and as a field crop in Timarpur during winter months. Used for culinary and medicinal purposes

Local name : Podina
Flowers and Fruits : May-June
J. K. Maheshwari 105

Ocimum Linn

Calyx hairy within :
Fruiting calyx 3 mm. long and corolla 6 mm *O. americanum*
Fruiting calyx 6 mm long and corolla 10-12 mm *O. basilicum*
Calyx glabrous within
Pedicels as long as or longer than calyx , bracts not exceeding calyx *O. sanctum*
Pedicels shorter than calyx , bracts longer than calyx *O. gratissimum*

O. americanum Linn. Sp. Pl. 833, 1753 (non Jacq.).
O. canum Sims in Bot. Mag. t 2452, 1824 , Royle, Ill 301 , FBI 4 · 607 ; FUGP 2 · 234 , Mukerjee, Lab. Ind Emp 17

A bushy, much-branched, pubescent herb woody at the base Leaves 3.5-5 × 1.5-2.5 cm., elliptic, elliptic-oblong to elliptic-lanceolate, entire or subcrenate. Flowers pale violet or purplish-white, in whorls of 4-6 on an erect, 4-9 cm. long, lax inflorescence , pedicels recurved Corolla exserted, up to 6 × 3 mm Nutlets ellipsoid. black, 1.5 × 1 mm

Common on the Ridge and the neighbouring hilly tracts during monsoon months on gravelly soil or amongst stones, in open or depressed places , often becoming gregarious at some spots

Local name : Bantulsa , Tulsiband ; Jangli tulsa
Flowers and Fruits : July-Nov.
J K Maheshwari 255 , 1081, New Delhi Ridge

O. basilicum Linn. Sp. Pl. 597, 1753 , FBI 4 · 608 ; FUGP 2 · 235 Mukerjee, op. cit. 18

An erect herbaceous plant, 0.6-1 m tall Leaves ovate-lanceolate, entire or toothed. Flowers whitish pink or purplish, in whorls on simple or branched racemes Nutlets black, pitted

Cultivated in gardens. The plant is [illegible] used as a flavouring agent.

Local name : Marua, Nayaro.
Flowers and Fruits : Major part of the [illegible]
J. K. Maheshwari 1295, Vallabhanagar [illegible]

O. sanctum Linn. Mant. 1 : 85, 1767 ; FBI 4 : 609 ; Pilt. [illegible] Merr. Enum. 3 : 422 ; Mukerjee, op. cit. 19 [illegible]

A much-branched, woody herb, often [illegible] 3-4 × 1.5-2 cm, ovate, elliptic-oblong to [illegible] serrate, hairy, minutely dotted. Flowers purple [illegible] racemes, often forming panicles. Bracts broad [illegible] exceeding calyx. Nutlets broad ellipsoid, smooth [illegible]

Commonly cultivated in the courtyards of homes [illegible] gardens, often as a pot plant. All parts of the plant are used [illegible] cinally.

Local name : Tulsi.
Flowers : Nov.-Feb.
J. K. Maheshwari 1352.

O. gratissimum Linn. Sp. Pl. 1197 : 1753 ; FBI 4 : 608 ; FUGP 2 : 234 ; Mukerjee, op. cit. 20.

An erect, much-branched shrub. Young parts pubescent. Leaves 5-10 × 3-6 cm, elliptic-lanceolate, crenate-serrate, tapering at ends, cuneate. Flowers small, clustered in short, simple or branched racemes. Bracts broad ovate, acuminate, longer than the calyx. Nutlets subglobose, brown.

Cultivated in gardens.

Flowers : Oct.-Dec.
J. K. Maheshwari 772, Rashtrapati Bhavan Compound.

Orthosiphon Benth.

O. pallidus Royle ex Benth. in Hook. Bot. Misc. 3 : 370, 1833 ; FBI 4 : 613 ; FUGP 2 : 236.

An erect, diffuse herb, 15 cm or more in height. Leaves [illegible] cm, ovate, crenate, petiolate, glabrous, greenish-yellow. Flowers 9 × [illegible] mm, white, in axil, erect verticillasters arranged in a raceme. Calyx enlarging in fruit, deflexed in fruit. Nutlets subglobose.

Rare. Some plants occur in the lower sandy or gravel [illegible] along the railway lines near Gurukul, from Delhi to Faridabad.

Flowers and Fruits : July-Sept.
J. K. Maheshwari 1235.

Anisochilus Wall.

A. carnosus Wall. Pl. As. Rar. 3 : 18 (1831). Royle Ill. 307. FBI 4 : 627. FUGP 2 : 240. Mukerjee op. cit. 58.

Royle first recorded this species from Delhi to Allahabad along the banks of Jumna. I have not come across the plant.

An erect annual, 30-60 cm. high. Stems glabrous or sparsely pubescent, often tinged with red. Leaves rather fleshy, 3-6 × 1-3 cm., broadly ovate, obtuse, crenate. Flowers pale purple, in 1-3-4 cm. long spikes. Nutlets subglobular, compressed, polished, brown.

Local name: Pawar.

Salvia Linn.

Subshrubs or undershrubs; leaf blades usually 0.5-2 cm. long. Calyx with gland-tipped hairs; corolla annulate within ..... *S. aegyptiaca*

Calyx with very long eglandular hairs; corolla exannulate ..... *S. santolinaefolia*

Herbs; leaf blades usually much exceeding 2 cm. ..... *S. plebeia*

S. aegyptiaca Linn. Sp. Pl. 23 (1753). FBI 4 : 656. FUGP 2 : 256. Mukerjee op. cit. 107.

A low, much-branched herb, up to 30 cm. high. Branches spreading, hairy or scabrous. Leaves tufted, 3-6.3 × 0.5-1 cm., linear-lanceolate, tapering at ends, dentate. Flowers bluish or white dotted with blue, in distant whorls of 2-6 arranged in erect or ascending racemes. Calyx hairy. Nutlets oblong-ellipsoid, black.

Occurs in the neighbourhood of Delhi.

S. santolinaefolia Boiss. Diagn. Pl. Orien. (ser. 1) 13, 1859 & Fl. Orient. 4 : 632. FBI 4 : 656. Mukerjee op. cit. 108.

S. aegyptiaca Linn. var. *pumila* Hook. f. in **FBI. 4** : 656, 1885 ; FUGP 2 : 256.

Differs from the preceding one in being more scabrous and villous. Leaves very rigid and rugose. Calyx longer, villous with long hairs.

Common on the Ridge as well as in the hilly tracts near Mehrauli and Faridabad on dry gravelly soil or in the crevices of stones. The plant extract is used for gonorrheal troubles.

Local name: Gulab-kosh.

Flowers and Fruits : July-Oct.

J. K. Maheshwari 1082.

S. plebeia R. Br. Prodr. 501, 1810. Merr. Enum. 3 : 413. Mukerjee op. cit. 111.

An erect, deep-rooted annual, 90-120 cm. tall. Stems stout, branched, 4-angular, grooved. Leaves 2.5-7.5 × 2-4 cm., oblong-lanceo-

[illegible] crenate. Flowers blu[illegible] spi[illegible] racemes. Bracts [illegible] Calyx [illegible] ovoid, brown. [illegible] channels [illegible] Flowers and [illegible] Winter and summer [illegible]
J. K. Maheshwari 844 ; 1084

Antsomeles R. Br

A. indica (Linn.) Kuntze, Rev. Gen. 512, 1891. Mukerjee [illegible] Emp. 152.
Nepeta indica Linn. Sp. Pl. 571, 1753.
Antsomeles ovata R. Br. in Ait. f. Hort. Kew [illegible] 2 : 245.

An erect, woody herb to under[illegible] the base. Stems shortly 4-winged, woolly [illegible] branch[illegible] ovate, cordate, crenate-serrate [illegible] Leaves [illegible] dark red to many-flowered axillary whorls [illegible] spicate inflorescence. Calyx accrescent [illegible] polished.

Common on moist soils of fruit gardens as a [illegible] or among the slopes of canal banks. Sometimes it [illegible] with its stems on *Capparis sepiaria* Linn. and other [illegible] becomes climbing in habit. The plant is medicinal [illegible] as fodder.

Local name : Parpata ; Kala bhangra ; Kala chena.
Flowers : June-Oct.
J. K. Maheshwari 104, Roshan Lal Gardens ; 1097

Leucas R. Br

Flowers in large, subglobose, terminal whorls only . . . . . *L. cephalotes*
Flowers in both axillary and terminal whorls
Calyx mouth split above, lower lip much prolonged *L. [illegible]*
Calyx mouth not split, projecting forward above *L. aspera*

L. cephalotes Spreng. Syst. 2 : 743, 1825, FBI. 4 : 689, FJGP 2 : 25, Mukerjee, op. cit. 168.

An erect, robust, pubescent annual 30-100 cm. tall. Stems and branches obtusely angular. Leaves 5-8 × 2-3.5 cm. ovate or ovate-lanceolate, crenate-serrate. Flowers white, in large, dense globose terminal whorls. Bracts many, foliar. Calyx mouth [illegible] hairy within. Nutlets dark brown, smooth.

Common along the borders as well as in the fields of winter season crops.

Local name : Gubbha
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 330, 395, 1307

L. urticaefolia R. Br. *Prodr.* 504, 1810; FBI 4 : 680, FUGP 2 : 249; Mukerjee, op. cit. 166.

An erect or diffuse hairy herb. Leaves 4-6 × 1.5-3.5 cm., ovate, coarsely toothed. Flowers white in dense globose whorls. Bracts linear or sub-lanceolate-lanceolate, ciliate. Calyx mouth very oblique. Nutlets obovoid-oblong, trigonous, brown.

Common in and along the edges of cultivated fields in villages.

Local name : Goma; Gumma

L. aspera (Willd.) Spreng. Syst. 2 : 743, 1825; FBI 4 : 690; FUGP 2 : 250; Merr. Enum. 3 : 410; Mukerjee, op. cit. 166.

Phlomis aspera Willd. in Link, Enum. Pl. Hort. Berol. 2 : 621, 1822.

An erect or diffuse, much-branched herb, hairy throughout. Leaves elliptic, linear, subentire to crenate. Flowers white, in terminal and axillary, up to 2.5 cm. across whorls. Bracts linear, filiform, ciliate. Nutlets oblong, smooth, brown.

Common in fallow and cultivated fields.

Local name : Gopha
Flowers and Fruits : Aug.-Feb.
J. K. Maheshwari 830

Nepeta Linn.

N. hindostana (Roth) Haines, Bot. Bih. & Or. 744, 1922; Mukerjee, op. cit. 133.

Glechoma hindostana Roth, Nov. Pl. Sp. 258, 1821.

Nepeta ruderalis Buch.-Ham. ex Hook. f. in FBI, 4 : 661, 1885; FUGP, 2 : 254.

A hairy herb, with several branches from the base. Branches 4-angular, grooved. Leaves 2-3.5 × 1.5-2.5 cm., ovate, broad ovate to suborbicular, coarsely crenate-serrate. Flowers 5-7 × 2-3 mm., blush-purple, in stalked axillary, dense cymes forming dense, spiciform thyrses at the top. Nutlets oblong, brown with white dots.

Rare. Found in the marshy places near Shahdara.

Flowers : June-Aug.
J. K. Maheshwari 1228, Shahdara

82. Plantaginaceae

Plantago Linn

Leaves narrow, linear, finely acuminate plants cultivated . . . . . *P. ovata*

Leaves broad, ovate to oblong-ovate obtuse or subacute . . . . . *P. major*

P. ovata Forsk. Fl. Aegypt. Arab. 31 1775 FBI 4 707 FI GP 2 262 Duthie & Fuller Field & Garden Crops 3 53 t. 92 *P. ispaghula* Roxb. Fl. Ind. 3 406. 1832

An erect almost stemless annual. Leaves 10-25 × 1 cm., woolly hairy linear, acuminate. Scapes straight erect. Flowers in 4-5-4-5 0.8-1 cm., cylindric or ovoid spikes. Bracts winged. Capsules 2-seeded

Cultivated for the seeds, the mucilage of which is used in local medicines for dysentery and disorders of the digestive system

Local name : Isaphgol
Flowers and Fruits : Jan.-March
J. K. Maheshwari 934

P. major Linn. Sp. Pl. 112, 1753 FBI 4 705 FUGP 2 65 Merr Enum 3 49.

A perennial, stout, glabrous herb. Leaves radical 8-25 × 4-7 cm., ovate or oblong-ovate, entire or sinuate-toothed decurrent, petioles sheathing Flowers crowded in long slender cylindric spikes. 8-20 × 0.8 cm. or more Corolla lobes reflexed. Capsules 4-5 2-3 mm ovate glabrous, circumscess. Seeds dull black

Uncommon Occurs near canal banks or moist places in Roshanara, Azadpur and Sabzimandi Gardens.

Flowers and Fruits : Major part of the year
J. K. Maheshwari 124, 21-Bigah Bagh (Azadpur)

83. Nyctaginaceae

Scandent or straggling, thorny shrubs, bracts large coloured . . . . . *Bougainvillea*

Erect, straggling or subscandent herbs bracts not coloured

Flowers showy, in a calyx-like involucre . . . . . *Mirabilis*

Flowers small, in heads of umbels, bracts minute . . . . . *Boerhavia*

Bougainvillea Comm. ex Juss. corr. Spach nom. cons.

Perianth tube densely pubescent, leaves and stems pubescent . . . . . *B. spectabilis*

Perianth tube more or less pubescent; leaves and stems subglabrous ... *B. glabra*

B. spectabilis Willd. Sp. Pl. 2: 348, 1799 (*Bugainvillaea*). Meer. Enum. [illegible]; Bailey, Man. [illegible] Pl. 358.

A woody scandent or straggling shrub, climbing [illegible] by the aid of hooked spines. Leaves and stems pubescent. Leaves ovate [illegible]. Flowers small, yellow, clustered at the ends of branches. Bracts 3, large, showy, in shades of red, exceeding the flowers. Achenes 5-ribbed.

Commonly cultivated as a decorative climber in gardens and lawns for its handsome bracts.

Flowers: Jan.-June.
J. K. Maheshwari 101

B. glabra Choisy in DC. Prodr. 13(2): 437, 1849; Bailey, loc. cit.

A scandent or straggling shrub. Leaves and stems glabrous or [illegible] glabrous. Spines straight or almost lacking. Leaves broad ovate to ovate-oblong. Bracts magenta or purple-coloured.

Native of Brazil. Cultivated in gardens.

Mirabilis Linn.

M. jalapa Linn. Sp. Pl. 177, 1753; Meer. Enum. 2: 132; Bailey, loc. cit.

An erect, much-branched herb or undershrub. Leaves 5-10 × 3-6 cm, ovate, truncate or cordate. Flowers 6 × 4 cm, white, red or yellow, showy, in a calyx-like involucre. Corolla tube elongated. Fruits leathery.

Native of Trop. America. Commonly cultivated as a pot plant in private and public gardens. The flowers open late in the afternoon.

Local name: Gulabbas; English name: Four O'Clock.
Flowers and Fruits: Aug.-Dec.
J. K. Maheshwari 363

Boerhavia Linn.

For a correct spelling of the generic name, see Sprague in Kew Bull. 348, 1928.

Leaves in unequal pairs, flowers smaller, in heads ... *B. diffusa*
Leaves in nearly equal pairs, flowers larger, in long-pedicelled umbels ... *B. repanda*

B. diffusa Linn. Sp. Pl. 3, 1753; FUGP 3: 2.
B. repens Linn. Sp. Pl. 3, 1753; FBI 4: 709.
B. procumbens Roxb. Fl. Ind. 1: 146, 1832.

A spreading, much-branched herb, prostrate or ascending along walls. Tap root stout. Leaves in unequal pairs, broad ovate or suborbicular,

circulate. Flowers pink or whitish, minute, in [illegible] 4-20, arranged in long-stalked axillary and terminal panicles [illegible] elevate. Stalked viscidly glandular on the [illegible]

An abundant and very common weed in all parts of India, [illegible] flowering [illegible] the crevices of ancient walls. The leaves are [illegible] useful against snake bite. The roots are used in [illegible] of skin affections [illegible] boils. The [illegible] used as fodder.

Local name: Santhi, Saoth, Bukhafta.

Flowers and Fruits: Major part of the year.

J. K. Maheshwari 23.

B. repanda Willd. Sp. Pl. 2: 22, 1797; FBI. 4: 709; FUGP 3: 3.

A diffuse, straggling or subscandent robust herb or shrub-like plant. Internodes long. Leaves longer than those in the previous species, in nearly equal pairs. Flowers pink, in slender long-peduncled umbels. Stamens much exserted. Fruits 7-9 mm., club-shaped, viscid-glandular.

Common, especially in the hedges of fruit orchards, where it is often found straggling amongst the bushes. It is frequently met with in the rainy days in Kingsway Camp, Sarai Rohilla and Sabzimandi Gardens.

Flowers and Fruits: June-Oct.

J. K. Maheshwari 69.

84. Amaranthaceae

Leaves alternate:

- Staminodes present between the stamens or forming a short hypogynous cup . . . *Aerva*
- Staminodes absent:
  - Ovary 2 to many-ovuled; flowers in simple or branched spikes . . . *Celosia*
  - Ovary 1-ovuled; flowers in axillary clusters or in spikes or panicles:
    - Flowers bisexual, pink, in spikes, fruit a crustaceous nut . . . *Digera*
    - Flowers unisexual or polygamous, fruit indehiscent or circumsciss . . . *Amaranthus*

Leaves opposite or clustered:

- Anthers 1-celled; leaves opposite:
  - Flowers in ovoid, terminal heads becoming cylindric later, stigma bifid . . . *Gomphrena*
  - Flowers in axillary clustered heads, stigma capitate . . . *Alternanthera*
- Anthers 2-celled:
  - Flowers perfect, in spikes:
    - Stamens 2, staminodes absent . . . *Nothosaerva*

Stamens 5, with interposed staminodes — *Achyranthes*
Flowers fascicled, perfect flower one, imperfect ones several, with hooked bristles — *Pupalia*

Aerva Forsk. nom. cons.

[illegible] correct spelling of the generic name, see Sprague in Kew Bull. 142, 1928.

Spikes only axillary, flowers uni- or bisexual . . . . — *A. lanata*
Spikes axillary and terminal, flowers dioecious — *A. tomentosa*

A. lanata (Linn.) Juss. in Ann. Mus. Par. 11 : 131, 1808, FBI 4 : 728; FJ GP 3 : 16, Merr. Enum. 2 : 130.

Achyranthes lanata Linn. Sp. Pl. 204, 1753.

A suberect, prostrate or diffuse herb. Stems and branches woolly tomentose. Leaves 2-4 × 1-2 cm., alternate, white-woolly beneath, obovate or cuneate-rounded. Spikes 0.5-1.5 × 0.5 cm., clustered in the axils. Flowers greenish-white, bisexual. Anthers yellow. Seeds black, shining.

Common all over the area, especially in shady spots in garden hedges and fields. Used in the treatment of wounds.

Local name : Gedun ki chal
Flowers and Fruits : After rains
J. K. Maheshwari 344, Ridge; 405, Azadpur Road

A. tomentosa Forsk. Fl. Aegypt.-Arab. 122 & 727, 1775, FJ GP 3 : 15.

A. javanica Juss. in Ann. Mus. Par. 11 : 131, 1808; Royle, Ill. 320, FBI 4 : 727.

An erect, woolly-tomentose herb or undershrub, up to 1 m. tall, branching from base. Leaves 2.5-6 × 0.5-1 cm., ovate-lanceolate, linear-oblong or linear, greenish white. Flowers unisexual, sessile, in dense, white-woolly up to 10 × 1 cm. spikes forming leafless, terminal panicles. Seeds dark brown, polished.

Common in waste places and unused ground near fields and the hilly tracts of Mehrauli and other places. Some plants, grown in the garden nursery, flowered almost throughout the year. The female plants are very common but the males are extremely rare, still the plant produces seeds, probably parthenogenetically. The flowering tops are sold in the market for decoration.

Local name : Dholmandi, Dholphulio, Kamheda
Flowers and Fruits : After rains
J. K. Maheshwari 343, Haiz Khas, 1332.

Celosia Linn.

Spikes unbranched, pale pink, dense — *C. argentea*

Spikes branched, forming a cockscomb, red or yellow

C. argentea Linn. Sp. Pl. 205. 1753; Royle, Ill. 320; FBI 4 [illegible]; Merr. Enum. 2: 127.

An erect, glabrous, tall herb, [illegible] angular, branched. Leaves 7.5-11 × 2.8-5 cm, [illegible] tapering at ends. Spikes terminal [illegible] 5-2 cm., pinkish-white. Flowers pale pink, [illegible] sides elliptoid. Seeds 1.5 × 1.5 mm., black or brown, polished.

A common weed of cultivated and fallow fields. The stems and [illegible] are used as vegetable and in medicine.

Local name: Chilmil, Sarwari, Satai
Flowers and Fruits: Aug.-Oct.
J. K. Maheshwari 397

C. cristata Linn. Sp. Pl. 205. 1753; Royle, Ill. 320; FBI 4: 715; FUGP 3: 7.

An erect, glabrous, annual ornamental, tall and branched. Leaves linear to ovate-lanceolate. Inflorescence of usually fasciated and crest-like divisions of the branched spikes forming a cockscomb. Spikes cylindric, terminal, red or yellow. Stigmas bifid.

Commonly cultivated for ornamental purposes in gardens. Often found as an escape in waste places near gardens.

English name: Cockscomb
Flowers and Fruits: Dec.-March
J. K. Maheshwari 530

Digera Forsk.

D. alternifolia (Linn.) Aschers. in Schwfth. Beur. Fl. Aethiopiens 180. 867.

Achyranthes alternifolia Linn. Mant. 50. 1767 (non Linn. f.)
Digera arvensis Forsk. Fl. Aegypt. Arab. 65. 1775; Royle, Ill. 320; FBI 4: 717; FUGP 3: 8.

A slender herb with spreading or erect branches. Leaves glabrous, variable, ovate, elliptic or lanceolate, up to 7.5 × 4 cm. Flowers pink or rose, in lax, axillary spikes. Fruits 3×3 mm., muriculate.

A weed of cultivated fields. Also common on the Ridge during the rainy season. Sometimes it acts as a collateral host of some fungi. The leaves, tender twigs and tender inflorescences are used as vegetable and also as cattle fodder.

Local name: Lesua, Lhasua, Kondra, Kohendro, Tandla
Flowers and Fruits: During and after rainy season
J. K. Maheshwari 319

Amaranthus Linn

Bracteoles awned or setaceous, equalling or exceeding the tepals, fruits circumscissile

Stamens 5, tepals 5

Spinous herbs or undershrubs, leaves ovate or oblong, obtuse *A. spinosus*

Spineless herbs; leaves acute or acuminate *A. hybridus* subsp. *cruentus* var. *paniculatus*

Stamens 3, tepals 3, leaves obtuse or emarginate *A. viridis*

Bracteoles ovate, barely awned, shorter than the tepals, fruits crudely dehiscent

Fruits with an acute apex, indehiscent, rugose, flowers in axillary clusters and in terminal panicled spikes *A. graecizans*

Fruits with a blunt apex, flowers in axillary clusters and terminal simple or lobed spikes, fruits orbicular or broad ovate *A. blitum* var. *oleraceus*

A. spinosus Linn. Sp. Pl. 991, 1753; Hook. f. Fl. Br. 4 : 718, FUGP 3 : 10; Merr. Enum. 2 : 128.

An erect or diffuse, spinous herb or undershrub. Spines sharp, straight, divaricate. Leaves 3.5-6 × 1.5-2 cm, ovate or lanceolate, spine-tipped, base cuneate. Flowers green, unisexual, in dense axillary, more or less globose clusters or in terminal and axillary, interrupted spikes. Male flowers with 5 stamens. Capsules ovoid, longer than broad. Seeds dark brown or black, shining, 1 × 1 mm.

A weed in cultivated fields and gardens. Common in open, waste places, on the slopes along roadsides and railway lines, near dirty water canals, etc., becoming gregarious and abundant at some spots. When the plant dies, the erect or prostrate, woody stumps are left on the ground for some time. Used as cattle fodder.

Local name : Kantevali chular; Goja

Flowers and Fruits : During and after rainy season

J. K. Maheshwari 82; 239

A. hybridus L. nn. subsp. **cruentus** Thell. var. **paniculatus** Thell. in Aschers. & Graebn. Syn. 5(1) : 247, 1914, Santapau in RBSI 16(1) : 250, 1953.

A. paniculatus Linn. Sp. Pl. 1406, 1763, Merr. Enum. 2 : 128.

A stout, branching, tall herb. Stems grooved. Leaves 5-12 × 2-3.5 cm, ovate, ovate-oblong to ovate-lanceolate, prominently nerved beneath, base cuneate. Spikes dense, reddish-green or yellow, forming a close panicle, the central spike the longest. Flowers pentamerous. Capsules ovoid.

Occurs as an escape near fields, lawns and hedges.

Flowers and Fruits : Oct.-Dec.

J. K. Maheshwari 250

A. tricolor Linn. Sp. Pl. 989. 1753, Merr. Enum. 2 : 128. Santapau RDSI 16(3) : 269. 1953

A. gangeticus Linn. Syst. 1268. 1759, FBI 4 : 719, [illegible]

A. polygonus Linn. Amoen. Acad. 4 : 294. 1759

A. melancholicus Linn. Sp. Pl. 989. 1753

A. oleraceus Willd. Sp. Pl. 4 : 386. 1805 (non Linn. [illegible]

An erect, diffuse, branching [illegible] variable, rhomboid or deltoid-ovate [illegible] flowering [illegible] spikes, numerous. Bracts and [illegible] mucronate or awned. Capsules ovoid, rugose. Seeds black, [illegible] 1.5 mm.

Occurs in waste place [illegible] along roads

Flowers and Fruits : Winter season

J. K. Maheshwari 1213. Grand Trunk Road

A. gracilis Desf. Tabl. Hort. Par. 43. 1804

A. viridis Hook. f. in FBI 4 : 720. 1885 (non Linn.) [illegible] FUGP [illegible]

An erect, glabrous, branching annual, 30-60 cm tall. Leaves [illegible] 7.5 × 2.5 cm, ovate or deltoid-ovate, base truncate or cuneate. Flowers pale green, in small axillary clusters and in axillary and terminal panicled, spike-like racemes, male and female flowers mixed. Stamens [illegible] Fruits acute, compressed, suborbicular, rugose. Seeds [illegible] lenticular, black, shining.

Common in waste, dry or moist places, near field-margins and cultivated fields during rainy and cold seasons. The tender parts and inflorescences are cooked as vegetable.

Local name : Chulai

Flowers and Fruits : After rains

J. K. Maheshwari 284

A. blitum Linn. var. **oleracea** Hook. f. in FBI 4 : 721. 1885, FUGP 3 : [illegible]

A tall, erect or suberect, glabrous herb. Leaves ovate-oblong or rounded, retuse, cuneate, prominently nerved beneath. Flowers yellowish-green, in axillary clusters and terminal, simple or branched spikes, trimerous. Utricle broad ovate. Seeds lenticular, polished.

Cultivated. Also found as an escape or weed in moist places. The aerial parts are eaten as vegetable.

Local name : Chaulai

Gomphrena Linn.

Stems erect, flower heads variously coloured . . . . . *G. globosa*

Stems spreading on the grounds; flower heads white . . . . *G. celosioides*

G. globosa Linn. Sp. Pl. 224. 1753, FBI 4 : 732, FUGP 3 : 21, Merr. Enum. 2 : 132, Bailey, Man. Cult. Pl. 356

A [illegible] branching, hairy [illegible] Leaves 5-10 × 2-3 cm., elliptic [illegible] Flower heads [illegible] × 2 cm., globular, purple, red or variously [illegible] peduncled.

[illegible] weed. Cultivated as a garden favourite, but often [illegible] near gardens and [illegible] on the Ridge.

English name Globe amaranth, Bachelor's button

Flowers After rains

I. K. Maheshwari 852

G. celosioides Mart. in Nov. Act. Nat. Cur. 13: 301, 1826; Sandwith in Kew Bull. 20: 256.

A low, prostrate or much branched herb with a [illegible] tap root. Branches covered with white shaggy hairs, ascending. Leaves 2.5-5 × 1.5 cm., spatulate-shaped or oblong-elliptic, mucronate, cuneate at base with long white shaggy hairs beneath. Flowers white, compressed, dense, cylindrical or ovoid terminal 2.5-5 × 2-2.5 cm. spikes, subtended by [illegible] small leaves. Perianth lobes 5, cottony-woolly. Styles short, stigmas 2-lobed. Fruit enclosed by the hardened perianth. Seeds brown, 1.5 mm.

Native of S. Brazil, Paraguay, Uruguay and Argentina. A recently introduced weed, which is rapidly spreading throughout Delhi. It is found amongst grasses, on roadsides and cultivated ground, in gardens and lawns, becoming troublesome at places.

Local name Kasia

Flowers and Fruits April-Aug.

I. K. Maheshwari 185, Azadpur Road

Alternanthera Forsk.

Leaves suborbicular or nearly circular; perianth segments spine-tipped, stamens 5 — *A. pungens*

Leaves linear-oblong, elliptic or oblanceolate, perianth segments not spine-tipped, stamens 3 — *A. sessilis*

A. pungens H. B. & K. Nov. Gen. & Sp. 2: 206, 1818; Melville in Kew Bull. 174, 1958.

A. echinata Sm. in Rees. Cyclop. 39: Suppl., No. 10, 1819.

A. repens Link, Enum. Pl. Hort. Berol. 1: 154, 1821 (non J. F. Gmel. 1791).

A prostrate or decumbent, spreading herb. Stems zigzag, clothed with shaggy hairs. Leaves suborbicular or nearly circular, obtuse, entire, tapering at the base, hairy. Flowers in axillary heads. Tepals becoming spiny in fruit. Stamens 5.

Native of Trop. America. A recently introduced weed, has become well established along roads, in fallow fields, waste places, along

railway lines and near gardens and [illegible]
Ridge in recently disturbed soils [illegible]

Local name - Kantovali sanch
Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 394, Uzirpur, Karnal Road

A. spinosus (Linn.) Dc. Cat. Hort. Monp. [illegible] Bull. 172, 1958.
Amaranthus spinosus Linn. Sp. Pl. 2[illegible] 1753.
A. [illegible] J. F. Gmel. Syst. Nat. [illegible]

A prostrate, spreading, polymorphic glabrous [illegible] the nodes. Branches many, often light purplish-grey. [illegible] elliptic, linear-oblong or oblanceolate, tapering towards [illegible] white, shining, in small, axillary, [illegible] broadly obcordate or orbicular. Seeds suborbicular.

A weed in cultivated fields and waste places. Also [illegible] places along the borders of ponds and tanks or grows as an aquatic [illegible] shallow water. A highly variable herb, depending on habitat conditions.

Flowers and Fruits : Rainy season
J. K. Maheshwari 91 ; 136 ; 818

Nothosaerva Wt.

N. brachiata (Linn.) Wt. Ic. 6 : 1, 1853. FBI. 4 : 726. FUGP 3 [illegible]
Illecebrum brachiatum Linn. Mant. 213, 1771.

An erect or diffuse, much-branched, glabrous herb. Leaves 2-4 × 1-2 cm., thinly membranous, elliptic or ovate-lanceolate, tapering at the base. Flowers greenish-white, in small, dense, axillary 6-20 × 3 mm. spikes. Stamens 2. Seeds minute, dark brown, shining.

Rare. Occurs in moist crevices between rocks or in soils near temporary ponds in the hilly tracts near Faridabad and in low-lying areas of Najafgarh.

Flowers and Fruits : Sept.-Feb.
J. K. Maheshwari 428; 816

Achyranthes Linn.

A. aspera Linn. var. **porphyristachya** Hook. f. in FBI. 4 : 730, 1885 ; Santapau in RBSI. 16(1) : 251, 1953.
A. porphyristachya Wall. Cat. 6925, 1832, nom. nud.

An erect or subscandent herb or undershrub. Leaves large, ovate, acute or acuminate, glabrous or nearly so. Flowers greenish-white, deflexed, in terminal spikes elongating in fruit. Bracts and bracteoles persistent, ending in a spine. Utricle oblong. Seeds subcylindrical, brown.

Common throughout the Ridge, in waste places, along fences of gardens, etc. A very troublesome weed when in fruit, due to its spinous bracteoles and pointed tepals. The ash is used in the treatment of cough and the flowering spikes and seeds are used against snake bite. The decoction is given in renal dropsy.

Local name: Gurkunda, Lapri, Chirchita, Salsala, [illegible], Munga.
Flowers and Fruits: Throughout the year.
J. K. Maheshwari 854.

Pupalia Juss. nom. cons.

P. lappacea (L.) Moq. in Ann. Mus. Par. 2: 132, 1803, FBI 4: 724; Fl. Cap. 1: 19; Merr. Enum. 2: 129.
Achyranthes lappacea Linn. Sp. Pl. 204: 175.

An erect or sprawling woolly undershrub branching from the base. Internodes long. Leaves ovate or elliptic, soft tomentose. Flowers in axillary and terminal long spikes. Bristles hooked, accrescent, sometimes spreading, velvetish at maturity, subtended by a 3-nerved, ovate bracteole. Perianth woolly. Stamens pinkish. Seeds black, polished.

Common, especially in the hedges of fields and fruit orchards. Also met with in the hilly tracts, in depressed areas or growing amongst the thorny shrubs.

Local name: Jhojhru; Din ka tara, Bhurat; Chirchitta.
Flowers and Fruits: After rains.
J. K. Maheshwari 317, Old Delhi Ridge.

85. Chenopodiaceae

Flowers usually bisexual, all similar:
- Leaves flat:
  - Roots tuberous; cultigens . . . . . *Beta*
  - Roots not tuberous, plants wild.
    - Fruiting perianth with transverse wings . . . *Kochia*
    - Fruiting perianth not winged . . . *Chenopodium*
- Leaves fleshy, half-terete:
  - Perianth lobes transversely winged . . . *Salsola*
  - Perianth lobes not winged . . . *Suaeda*

Flowers unisexual, dimorphic; utricle enclosed in a capsule-like, bracteal body . . . . . *Spinacia*

Beta Linn.

B. vulgaris Linn. Sp. Pl. 222, 1753; Bailey, Man. Cult. Pl. 353.
A glabrous, tuberous herb. Leaves mostly basal, ovate to oblong-

ovate, passing into linear bracts in the [illegible] many, in open panicles [illegible]

A winter season cultigen in fields [illegible] which are eaten raw or cooked [illegible] from Nov. to April. Cultivation [illegible] sary for its growth. The cultivars [illegible] Yellow, Sunset, Globe and Blood Red [illegible]

Local name : Chukandar

Kochia Roth

K. indica Wt. [illegible] 1799, 1850 [illegible] 11 [illegible]

A erect or diffuse much branched bush [illegible] white woolly hairy. Leaves 2-3 × 0.5 cm [illegible] loosely hairy especially beneath [illegible] or paired. Perianth woolly. Stamens deep orange [illegible] membranous. Seeds very minute, very light.

A so-called miracle plant found on dry soil, on unused areas [illegible] roadsides and dry canal banks, often gives rise to green clumps [illegible] not occur in the hilly parts but can be seen in areas around [illegible] Oxbia and Najafgarh. Also common near the aerodromes of Delhi. When vegetative the leaves are larger and borne close to one another on flowering shoots they are smaller and borne distant. [illegible] much liked by camels and cattle. The dried plants are used as fuel.

Local name : Bui

Flowers and Fruits : July-Nov.

J. K. Maheshwari 322, 440; 475

Chenopodium Linn.

Strongly foetid-smelling undershrubs, stigmas usually 5 [illegible] *C. ambrosioides*

Tall or short, scentless herbs, stigmas 2 :

Seeds smooth, shining — *C. album*

Seeds rugose, dull black — *C. murale*

C. ambrosioides Linn. Sp. Pl. 219 1753, Merr. Enum. 2 : 125; Haines Bot. Bih. & Or. 770

An erect, strongly foetid-smelling woody, aromatic much-branched shrub 90-150 cm tall, often gregarious [illegible] green [illegible] Stems ribbed, often purple-tinged, leafy. Leaves 4-10 × 2-[illegible] cm, oblong-ovate, sinuate-dentate, the upper subentire. Flowers greenish, some turning to purplish, in small clusters forming slender, axillary, interrupted and terminal, simple or paniculate spikes. Bracts fleshy. Perianth 5-lobed, clasping the fruit. Stigmas usually 5, spreading. Utricle membranous, 1-seeded. Seeds brown, polished, smooth, about 1 × 1 mm.

Native of Mexico. A recently introduced weed, often grows gregariously either by itself or along with *Xanthium strumarium* L. on waste, undisturbed, waste places near gardens and along roadsides. The plant gives a strong camphoraceous odour.

Local name : Khartua
Flowers and Fruits : April-Sept.
J. K. Maheshwari 154, Shahdara : 987, near Azadpur.

C. album Linn. Sp. Pl. 219, 1753, FBI. 5 : 3 ; FLGP. 3 : 22.

An erect herb, green or coated with white, mealy, granular pubescence. Stems ribbed, woody in tall plants. Leaves variable in size, entire, toothed or lobed, rhomboid-oblong or deltoid-ovate. Flowers in terminal and axillary clusters forming compact panicled spikes, the terminal spikes becoming thyrsoid. Styles 2.

A common winter and summer weed in waste places and dry gravelly soils of arable, fallows and cultivated grounds, sometimes cultivated. There are two spontaneous crops every year in fallow fields, the summer plants being somewhat bitter. Some abnormal specimens attain a height of 3 m or more. The leaves and tender twigs are used as vegetable and also in a curd preparation known locally as 'Raita'. Also used as fodder.

Local name : Bathua, Chaudan bathua; Bathu
Flowers and Fruits : Aug.-Dec.
J. K. Maheshwari 986, 1346.

C. murale Linn. Sp. Pl. 219, 1753, FBI. 5 : 4, FLGP. 3 : 23.

A glabrous, erect herb. Stems 15-45 cm. high, ribbed. Leaves 4.0 × 3-4.5 cm., oblanceolate rhomboid or ovate-deltoid, 3-nerved at base, obtuse or sharply toothed. Flowers green, in clusters of lax or dense, axillary divaricate cymes, the terminal panicle leafless. Stamens yellow. Seeds orbicular, dull black, rugose.

A winter season weed, common in moist, shady situations in cultivated fields, waste places, etc. Used as fodder.

Local name : Khartua
Flowers and Fruits : Dec.-March
J. K. Maheshwari 1164.

Salsola Linn.

S. baryosma (Roem. & Schult.) Dandy in F. W. Andr. Fl. P. Anglo-Egypt. Sud. 1 : 141, 1950.

Chenopodium baryosmon Roem. & Schult. Syst. 6 : 269, 1820.
Salsola foetida Delile, Fl. Egypte 57, 1813, nom. nud., FBI. 5 : 18, 1886, FLGP. 3 : 26.

An erect, much-branched, ascendingly spreading, hoary undershrub.

Stems pale or purplish in vegeta[illegible] Branche[illegible] tal. Leaves minute, broad ovate to subsp[illegible] imbricate. Flowe[illegible] in short axillary spikes. Pe[illegible] accrescent with broad bu[illegible] membrano[illegible]

Common in the saline alluvial waste sandy tracts [illegible] itself or associated with *Suaeda fru[illegible]*

Flowers June-Sept. [illegible] Winter [illegible]

J. K. Maheshwari 282. Okhla.

Suaeda Forsk. ex Scop.

Stigmas 3 [illegible]

Stigmas 2 [illegible] *S. f.*

S. fruticosa (L.) Forsk. Fl. Aegypt.-Arab. 70, 1775; FBI. 5 [illegible] FLGP. 3 : 24, Parker, For. Fl. 416.

Chenopodium fruticosum Linn. Sp. Pl. 221 [illegible]

An erect or prostrate much-branched under[illegible] purplish tinged, branches horizontally spreading or ascend[illegible] 5-15 × 2-3 mm. crowded all round the axis, succule[illegible] oblong. Flowers green, bisexual, turning red [illegible] solitary or clustered, the upper ones forming slender [illegible] Perianth persistent. Utricle turbinate, membranous, spongy. Seeds obliquely ovoid, beaked, black, shining.

Abundant in the saline tracts and unused fallow ground where dominates the vegetation either grows [illegible] itself or associated with *Suaeda barvosma* Dandy, *Kochia indica* Wt., *Chenopodium album* Linn., *Spergularia marginatus* Hochst., *Atriplex pseudalhagi* Desv. and [illegible] Linn. Very common on the waste lands near Model Town. [illegible] as cattle fodder and the dried parts are burnt as fuel.

Local name : Bur; Lonia; Nunkhuri

Flowers and Fruits : Dec.-June

J. K. Maheshwari 1101

S. maritima (Linn.) Dumort. Fl. Belg. 22, 1827, FBI. 5 : 14, FLGP. 3 : 25.

Chenopodium maritimum Linn. Sp. Pl. 221, 1753.

An erect, annual, robust herb. Stems woody, branches many, horizontal. Leaves linear oblong, fleshy, borne all round, often turning red at maturity. Flowers in small, subglobose clusters, forming a lower loose, elongate spikes. Perianth of 5 fleshy lobes, enclosing the fruit. Stigmas 2, whitish. Seeds black, shining.

Common in the saline tracts and fallow fields, especially near Okhla, Shahdara and Timarpur, often dominating the ground with its dense growth.

Local name : Bur; Lonia; Nunka

Flowers and Fruits : Dec.-June

Spinacia Linn

S. oleracea Linn. Sp. Pl. 1027, 1753; Bailey, Man. Cult. Pl. 354

An erect annual, smooth herb, forming large, radical leaves. Cauline leaves smaller, becoming lanceolate in the inflorescence. Flowers [illegible] sexual, the staminate in spikes or panicles, the pistillate clustered. Utricle [illegible]

Both prickly-seeded (triangular-leaved) and smooth-seeded ([illegible] leaved) varieties are cultivated during winter season in fields and gardens for its leaves which are much used as vegetable. Often spontaneous in moist, waste places near gardens. Sold throughout the year.

Local name : Palak
Flowers : June-July
J. K. Maheshwari 36, Timarpur

86. Basellaceae

Basella Linn.

B. rubra Linn. Sp. Pl. 272, 1753 ; Lamk. Tab. Encycl. t. 2 5, f. 1, 1792, FBI 5 : 20, FLGP 3 : 27 ; Merr. Enum. 2 : 137
B. alba Linn. Sp. Pl. 272, 1753

A glabrous, twining succulent shrub. Leaves broad ovate, cordate, subsucculent, entire, glossy. Flowers pinkish or pale purple, in lax, axillary peduncled spikes. Perianth fleshy. Utricle black, ovoid.

Grown on trellises and hedges around gardens for its leaves which are used as vegetable.

Local name : Poi
Flowers and Fruits : Sept.-Feb.
J. K. Maheshwari 486

87. Polygonaceae

Habit erect; ocreae large ;
Perianth 4 to 5-merous, segments not toothed; stigmas capitellate . *Polygonum*
Perianth whorls 2, each 3-merous, inner segments enlarged and toothed or comb-shaped; stigmas fimbriate . *Rumex*
Habit climbing . *Antigonon*

Polygonum Linn.

Nutlets nearly included in the perianth
Flowers in axillary clusters; herbs with small leaves and hyaline stipules . *P. plebeium*

Flowers in terminal, racemose, spicate or capitate [illegible]
Inflorescence capitate [illegible]
Inflorescence elongate, stout or filiform [illegible]
Nutlets biconvex [illegible]
Bracts densely white-woolly, whole plant [illegible] cottony [illegible]
Bracts glabrous, plants glabrous [illegible]
Nutlets trigonous [illegible]
Racemes slender, filiform, bracts [illegible] flowers pink, perianth glandular. *P. hydropiper* subsp. *mexicanum* var. *lent* [illegible]
Racemes stout and short with closely imbricate bracts [illegible] white, perianth eglandular. *P. barbatum* subsp. [illegible]
Nutlets much exceeding the perianth. *P. lapathifolium*

P. plebeium R. Br. Prodr. 420. 1810, FBI. 5. 27; FUCP. 3. 31, Merr. Enum. 2. 124.

A prostrate, diffusely branched, glabrous herb, often with a woody rootstock. Leaves 10-25 × 2-3 mm., oblong, linear or obovate; stipules hyaline, short. Flowers 3 × 3 mm., cosy, solitary, axillary or 2-3 together. Perianth free nearly to the base. Nutlets 3-gonous, shining, black.

A very variable plant, common throughout especially in moist shady places. Used medicinally.

Local name : Machechi ; Machati
Flowers and Fruits : Rainy season
J. K. Maheshwari 30

P. chinense Linn. Sp. Pl. 363, 1753, Merr. op. cit. 122, Haines, Bot. Bih. & Or. 780.

A diffuse, much-branched, scrambling undershrub. Leaves 10-15 × 4-7 cm., broad ovate to oblong, stipules very membranous. Flowers white, in capitate heads forming axillary and terminal divaricate, pubescent panicles. Bracts scarious.

Cultivated in gardens.

Flowers and Fruits : Jan.-May
J. K. Maheshwari 657, Rajghat Compound, 783

P. lanigerum R. Br. Prodr. 419, 1810, FBI. 5. 35, FUCP. 3. 34, Merr. Enum. 2 : 123.

An erect, robust perennial, 60-150 cm. high. Stems clothed with white tomentum, swollen above the nodes. Leaves 10-20 × 2-3 cm., linear-lanceolate, densely white-woolly beneath. Flowers white or pink, crowded in slender, 40-70 × 5-8 mm. racemes. Nutlets orbicular.

Rare, found partly under water or along the banks of canals and ponds.

Flowers and Fruits : Oct.-Dec.
J. K. Maheshwari 523, pond in Roshanara Gardens.

P. glabrum Willd. Sp. Pl. 2: 447, 1799, FBI 5: 34, in part, FLGP 3: 35. Merr. loc. cit.

An erect or decumbent, glabrous, stout annual. Stems 60-150 cm. high. Leaves 7.5-7.5 × 3.3 cm., lanceolate, acuminate, glandular punctate. Ocreae truncate. Flowers pink, in erect racemes forming a terminal panicle. Perianth eglandular. Anthers reddish. Nutlets nearly orbicular, biconvex, dark brown, polished.

Common in marshes and along canal banks, often associated with other species of *Polygonum* and marshy grasses or sedges.

Local name : Nali.
Flowers and Fruits : Sept.-March.
J. K. Maheshwari 550, near Jamuna Br'dge.

P. hydropiper L. var. subsp. **microcarpum** Danser var. **lenticularia** Danser in Bull. Jard. Bot. Buitenz. (sér. 3) 8 : 189, 1927.

P. hydropiper Meissn. in DC. Prodr. 14 : 109, 1856, in part, Hook. f. in FBI 5 : 39, 1886, Gage in RBSI. 2: 401 & 425, 1903; FLGP 3 : 37.

A glabrous, robust herb up to 1 m. tall. Stems prostrate and rooting below, with minute secretory glands. Leaves 6-12 × 1.5-2.5 cm., lanceolate or oblong-lanceolate, tapering at ends, margins ciliate. Stipules glandular, shortly ciliate or ciliate. Flowers pink, in slender, filiform, flexuous, 6-10 × 0.3 cm. racemes, bracts more or less distant. Nutlets opaque, granulate, shining.

Common in marshes and along canal banks, often associated with other species of *Polygonum* and differs chiefly in its slender, filiform racemes with somewhat distant bracts. The plant is known for the biting taste of its leaves.

Flowers and Fruits : Oct.-March.
J. K. Maheshwari 551, Hindan River; 622, Roshanara Gardens.

P. barbatum L. var. subsp. **gracile** Danser in Bull. Jard. Bot. Buitenz. (sér. 3) 8: 146, 1927.

P. barbatum Hook. f. in FBI 5 : 37, 1886.

P. serrulatum Hook. f. in FBI 5 : 38, 1886 (excl. var. *dondi*), (non Lagasca nec. Meissn. nec. Miq.).

An erect, glabrous annual, 60-120 cm. high, prostrate and rooting below. Leaves 5-15 × 3.5-5 cm., linear or elliptic oblong, acute or acuminate, margins ciliate. Stipules strigose, nerved with bristles on the margin as long as or shorter than the tube. Flowers white, in short, stout, spiciform panicles. Bracts glabrous, with several, rough bristles from the top. Perianth eglandular. Nutlets trigonous, polished.

Common in marshy places, along canal banks and in temporarily wet ground near gardens, along roadsides, etc. Goats eat this plant.

Local name : Mirchi; Jalbahar, Bau bhauch
Flowers and Fruits : Aug May
J. K. Maheshwari 300, pond in Roshanara Gardens

P. fagopyrum L. on Sp. Pl. 364. 1753. Santapau in RBSI 16(1) 254 1953

Fagopyrum esculentum Moench Meth. 290. 1794. Bailey Sp. Cl. 349

A glabrous, much branched undershrub 30-100 cm. tall. Leaves 4-8 × 3.5-5 cm. triangular-ovate, cordate. Flowers white, in terminal subcorymbate cymes. Nutlets distinctly triangular with sharp angles and flat sides.

Cultivated for its grain.

English name : Buckwheat
Flowers and Fruits : Cold season
J. K. Maheshwari 3.

Rumex Linn

R. dentatus Linn. Mant. 2. 226, 1771, FBI 5 : 59, FUGP 3 : 41

An erect, deep-rooted, glabrous annual 30-100 cm. high. Roots red-coloured. Stems ribbed. Radical leaves much longer than cauline ones, 10-15 × 3-7 cm. oblong, obtuse, rounded or cordate. Flowers green bisexual, in leafy or leafless, verticillate clusters. Perianth 5 × 3 mm., biseriate, inner segments tubercled on the back, the teeth much enlarged in fruit turning to brownish-red. Nutlets acutely trigonous, brown.

Common and sometimes abundant near canal banks, in fruit orchards and similar moist situations.

Local name : Lalbib, Jangli chorai, Jangli palak, Khat palak
Flowers and Fruits: Jan.-June
J. K. Maheshwari 601, Najafgarh

Antigonon Endl

A. leptopus Hook. & Arn. Bot. Beech. Voy. 308, t. 69. 1841. Bailey Man. Cult. Pl. 351; Bor & Raiz. 265.

A large, handsome climbing shrub. Leaves ovate, veiny, acute to acuminate, glabrous. Flowers showy, pink or red, in copious racemes which terminate into tendrils. Perianth lobes petaloid, the 3 outer ones larger.

Native of S. America. Commonly planted in gardens, along trellises and poles.

English name : Coral creeper
Flowers : Cold season
J. K. Maheshwari 364

88. Aristolochiaceae

Aristolochia Linn

A herb, plants wild . . . . . *A. bracteata*
A climbing shrub, plants cultivated . . . . . *A. elegans*

A. bracteata Retz. Obs. 5: 29. 1788; F.BI. 5: 75; F.I.GP. 3: 44; Singh in Jour. Agric. Sci. 15(6): 302. 1945.

A glabrous, prostrate herb. Leaves 4.6–3.5–4.5 cm., glabrous, reniform or broad ovate, deep cordate, basal lobes rounded. Flowers 8–5 mm., dark purple, solitary, tubular, with trumpet-shaped mouth. Capsules oblong-ellipsoid, ribbed, 2.5–1.5 cm.

Rare. It is an extremely bitter plant and is used as an anthelmintic.

Local name: Kaviar.
Flowers: Greater part of the year.
J. K. Maheshwari 505.

A. elegans Mast. in Gard. Chron. 2: 301. 1885; Merr. Enum. 2: 119; Bailey, op. cit. 346; Bor & Raizada 26. f. 22.

A glabrous climbing shrub. Leaves broadly reniform-cordate, obtuse or rounded, long-petiolate, basal lobes rounded. Flowers blotched with dark purple or violet-brown, white outside, solitary. Perianth tube elongated, yellowish green, limb nearly circular.

Native of tropical America. Grown as an ornamental climber along the trellises, forming a dense screen with its foliage.

Flowers: Oct.-Dec.
J. K. Maheshwari 1448.

89. Proteaceae

Grevillea R. Br. nom. cons.

G. robusta A. Cunn. in R. Br. Prot. Nov. 24. 1830; Parker, For. Fl. 430; Bailey, op. cit. 345.

A lofty robust, oakaceous tree with hoary or rusty-tomentose, young branches. Leaves fern-like, bipinnate or sometimes tripinnate, pinnae entire or deeply pinnatifid, lanceolate. Flowers greenish-yellow mixed with orange, in secund, one-sided, showy racemes. Ovaries stipitate, style long, lateral. Fruit an oblique, coriaceous, 1.6–1 cm. follicle, brown. Seeds 1 or 2, winged.

Native of Queensland and New South Wales. Planted in lawns, shrubberies, hedges, gardens and along roadsides. Grows favourably in the climate of Delhi and attains a good height.

English name: Silk-oak.
Flowers: March-April. Fruits: May-July.
J. K. Maheshwari 651, University Compound.

90. Loranthaceae

Dendrophthoë Mart

D. falcata (Linn. f.) Ettings. in Denkschr. Akad. Wissen. Math. Nat. Kl. 32: 52, 53, 58, t. 13, f. 14 (1872); Sahni & Bahl in RBSI 61: 362 (1953). *Loranthus falcatus* Linn. f. Suppl. 211 (1781). *L. longiflorus* Desr. in Lamk. Encyc. 3: 598 (1792); Fl. Br. 5: 214 (Wt. Ic. t. 302).

A much-branched stout, fully partial parasite. Leaves opposite, 4.5–8 cm., leathery, variable in shape, 6–12 × 2.5–6 cm., brittle, yellowish-green; midrib distinct in the lower part. Flowers vermilion to deep orange, 50–4 mm., crowded in short racemes on leafless nodes, bracteate. Stamens exserted. Stigmas knob shaped. Fruits ovoid-oblong, black when ripe.

Met during the cold season on the Ridge and also in gardens. The more common hosts are *Acacia leucophloea* Willd., *Ehretia laevis* Roxb. and *Dalbergia sissoo* Roxb., also seen sometimes on *Ficus benghalensis* Linn., and *F. religiosa* Linn.

Local name: Banda.
Flowers: Nov.–Jan. Fruits: Feb.–April.
J. K. Maheshwari 782, Old Delhi Ridge.

91. Euphorbiaceae

Flowers in cyathia, i.e. reduced to single stamens enclosed in an involucre with a single, central female flower, the whole resembling a single flower. Juice always milky — *Euphorbia*

Flowers not in cyathia, not reduced to single stamens or a single ovary contained in an involucre:

- Cells of ovary 1-ovuled, juice sometimes milky
  - Petals present in one or both sexes, or if absent, calyx petaloid
    - Leaves palmately lobed or panduriform — *Jatropha*
    - Leaves not palmately lobed
      - Erect or prostrate, whitish or purple-tinged herbs, seeds non-strophiolate — *Chrozophora*
      - Erect, woody, green herbs; male flowers white, seeds with a white, spongy cap — *Croton*
  - Petals absent in both sexes
    - Stamens many; capsules prickly: shrubs or small trees . . . . . *Ricinus*
    - Stamens few; capsules not prickly:
      - Erect herbs or shrubs; leaves eglandular at base . *Acalypha*
      - Trees; leaves 2-glandular at base . . . . . *Sapium*

Cells of ovary 2-ovuled, juice very rarely milky
Style arms much dilated, fruit an indehiscent drupe *Putranjiva*

Styles and style arms slender
Male flowers with a large 2 to 3 fid pistillode, dioecious shrubs *Securinega*

Pistillode absent in males
Disc none or either sex combined with the calyx lobes, shrubs or small trees *Melanthesa*
Disc present in the female and often in the male flowers, herbs, shrubs or trees
Fruit a dry capsule, herbs . . . . . *Phyllanthus*
Fruit a berry
Shrubs; fruit small, fleshy, dark purple *Kirganelia*
Trees; fruit large, fleshy, pale yellow . . *Emblica*

Euphorbia Linn

Plants armed with stipular spines
Woody, small shrubs, flowers crimson . . . . . *E. milii*
Erect shrubs or trees; flowers yellowish . . . . . *E. neriifolia*
Plants unarmed
Inflorescence with brilliant, scarlet, bracteal leaves, a garden shrub . . . . . *E. pulcherrima*
Bracts green or pale
Involucres with a single, large gland, an introduced, erect herb or undershrub . . . . . *E. geniculata*
Glands of involucre not large, erect or prostrate, small herbs
Erect herbs leaves alternate to opposite, involucre glands 2-horned *E. dracunculoides*
Prostrate or ascending herbs, leaves all opposite; involucre glands not 2-horned :
Leaves 1 2 4 cm long, prostrate or ascending herbs .
Involucre glands bordered by a conspicuous, rounded limb, glabrous or puberulous herbs . . . . . *E. hypericifolia*
Involucre glands with very small or obsolete limb; hispid-hairy herbs . . . . . *E. hirta*
Leaves less than 1 2 cm long, prostrate herbs :
Capsules glabrous, plants glabrous . *E. clarkeana*
Capsules pubescent or hirsute; stems hairy or hispid-hairy:
Capsules hairy only along the keels . . . . . *E. prostrata*

Capsules pubescent or hirsute throughout
Leaves crenulate, capsules pubescent [illegible] furrowed [illegible] *E. thymifolia*
Leaves [illegible] capsules hirsute, seeds pitted [illegible] *E. granulata*

E. milii Ch.-des-Moulins in Bull. Hist. Nat. Soc. Lond. Bourgeau [illegible] 27 30 Pl [illegible] 1836, Croizat in Jour. Arn. Arb. 21 506 1940
E. splendens Bojer ex Hook. in Bot. Mag. [illegible] 1839

A [illegible] much branched somewhat climbing [illegible] shrub, becoming 90-30 cm long armed with recurve like spines. Leaves [illegible] the stem fasciculed, 3.5 [illegible] 2-7 cm spathulate or obovate. Flowers showy, crimson in long pedunceled dichotomous cymes each cyathium subtended by 2 hemispheric, cuspidate bright red bracts.

Grown as an ornamental on rockeries in gardens and in hedges along with other euphorbias and cacti.

Flowers : Major part of the year
J. K. Maheshwari 1002

E. nerifolia Linn. Sp. Pl. 451, 1753, FUGP 3 : 76

An erect, succulent shrub or small tree. Branches terete, with 5, more or less spirally twisted ribs. Twin spines sharp, persistent, divergent from a tubercled base. Involucres ternate, yellowish, the lateral ones pedicelled and bisexual, the central flower usually male and sessile. Glands transversely oblong, yellow.

Often planted as a field and boundary fence and as curios on rockeries in gardens and verandahs in front of shops. The latex is used in tooth troubles.

Local name : Thor
Flowers : March-May
J. K. Maheshwari 1132

E. pulcherrima Willd. ex Kotz. in Otto & Dietr. Allgem. Gartenz. 2 27, 1834, Merr. Enum. 2 : 463
Poinsettia pulcherrima R. Grah. in Edinb. N. Phil. Jour. 20 412 1836; Bor & Raiz. 171, Pl. 60, 61.

An erect or diffuse garden shrub. Leaves ovate-elliptic to lanceolate long-petiolate, bracteal leaves raved, bright vermilion-red or crimson-scarlet. Cyathia in cymes. Involucres bearing a large, yellow gland on one side.

Native of Mexico. It is the Poinsettia of local gardeners and florists commonly planted in the hedges and shrubberies of gardens.

English name : Poinsettia
Flowers : Cold season
J. K. Maheshwari 785

E. geniculata Ortega, Nov. Rar. Pl. Matr. 18 : 1797; FUGP 3 : 83.

An erect or ascending stout fistular annual, up to 120 cm. tall. Leaves all crowded below, opposite above, 0.15-5.8 cm. variable in shape, ovate-elliptic, elliptic-oblong to elliptic, hairy and whitish beneath, flat, green towards the apex and white near the base. Involucre flower-like, 5-toothed with one conspicuous lateral gland. Capsules pubescent, bent, sometimes 3-celled.

A naturalised weed from tropical America. Found in garden beds, in flower ornamental herbs or moist, sandy soils. It occurs up to one grow in the nursery beds of the University Gardens. Also met on recently disturbed soils near gardens.

Flowers and Fruits : May-Dec.
J. K. Maheshwari 367

E. dracunculoides Lamk. Encycl. 2 : 428, 1788; FBI. 5 : 262, FUGP 3 : 78.

An erect smooth dichotomously branched deep-rooted herb. Branches many leafy. Leaves 3.5-5.0 × 0.3-0.4 cm. linear to near-lanceolate, alternate to opposite 2-3 at each node. Involucres nearly sessile, outer glabrous, lobes cuneate, glands moon-shaped. Flowers pale yellow. Capsules glabrous, about 5 × 4 mm. Seeds ellipsoid, strophiolate.

Common in cultivated and fallow fields on sandy and clayey, dry soils. Used as fodder.

Local name : Luchi
Flowers and Fruits : April-Aug.
J. K. Maheshwari 810

E. hypericifolia Linn. Sp. Pl. 454, 1753; FBI. 5 : 249; FUGP 3 : 80.

An erect or decumbent glabrous annual, 15-60 cm. long. Branches often purplish. Leaves all opposite, very variable in shape, linear-oblong to elliptic-ovate, often serrulate. Involucres clustered, green, bordered by a conspicuous, white or pink limb, glands petaloid, pink. Capsules pubescent, bent. Seeds 4-angled, ellipsoid.

A common weed in fields, lawns and along canal banks on moist or dry, sandy soil; often mixed with grasses.

Flowers and Fruits : May-Oct.
J. K. Maheshwari 39

E. hirta Linn. Sp. Pl. 454, 1753; FUGP 3 : 80; Merr. Enum. 2 : 462.
E. pilulifera auct. (non Linn.)

An annual, prostrate or ascending hispid herb, branching from the rootstock. Leaves dark green or reddish above, white-villous beneath, 2.5-4 × 1.5-2 cm., elliptic or ovate-oblong with oblique bases. Cyathia axillary and terminal, clustered in dense, crowded cymes. Involucres

stalked, cup-shaped. Capsules about 1 × 1 mm, [illegible] Seeds reddish-brown, trigonous.

A common and abundant weed throughout on the Rajasthan [illegible] and waste grounds. A weed in the crevices of walls and [illegible] near habitations, often seen lying along the walls.

Local name : Dudh, Dudhibel

Flowers and Fruits : Greater part of the year

J. K. Maheshwari 224

E. clarkeana Hook. f. in FBI. 5 : 253, 1887; FUGP 3 : 8.

A prostrate, glabrous annual. Leaves up to 1.5 × 0.5 cm, [illegible] glabrous, obliquely linear-oblong, base nearly auricled on [illegible] Involucres solitary, axillary, glabrous, glands 4, white. Capsules [illegible] brown, cocci keeled. Seeds brown, 4-angled, obscurely rugose.

Common on dry sandy clayey soils.

Local name : Dudhi; Dudhni

Flowers and Fruits: Aug.-Nov.

J. K. Maheshwari 1306, Vallabgarh

E. prostrata Ait. Hort. Kew. 2 : 139, 1789; Merr. op. cit. 463.

A prostrate or ascending, slender annual herb. Branches minutely hairy, often on one side purple. Leaves opposite, 5-10 × 3 mm., obliquely oblong, minutely serrate towards the tip. Involucres campanulate, usually paired. Glands usually 4, each with a minute petaloid limb. Capsules usually bent, about 1 × 1 mm., cocci prominently keeled with stiff, spreading hairs on the keels. Seeds 4-angled, brown, transversely furrowed.

A new record from Delhi State. Introduced. Common and abundant throughout along roadsides, dry open places, in gardens and along gravelly walls. It much resembles *E. clarkeana* Hook. f. which, however possesses glabrous capsules.

Flowers and Fruits : Major part of the year

J. K. Maheshwari 315

E. thymifolia Linn. Sp. Pl. 454, 1753; FBI. 5 : 252; FUGP 3 : 81; Merr. op. cit. 464.

A small, prostrate, pubescent herb, divaricately branched. Leaves 5-10 × 3-5 mm., obliquely oblong, crenulate. Stipules fimbriate. Involucres small, 1-3. Capsules erect, obtusely keeled, hairy. Seeds transversely furrowed.

Common in waste places.

Flowers and Fruits : Aug.-Dec.

E. granulata Forsk. Fl. Aegypt.-Arab. 94, 1775; FBI. 5 : 252; FUGP 3 : 81.

A small prostrate, hispid-hairy herb, greenish or purplish in appearance. Leaves prominently oblique at base, opposite, entire, ovoid, 5-8 × 3-5 mm. Cyathia usually with a small petaloid limb. Capsules hirsute, not keeled, about 1 × 1 mm. Seeds brown, 4 angular.

Common on dry, yellowish, sandy soils of fallow fields and also near the hilly tracts of Gurgaon district and Mehrauli.

Flowers and Fruits : Feb.-Aug.
J. K. Maheshwari 824, near Gurukul (Faridabad), 1155, Mehrauli.

Jatropha Linn.

Leaves palmately lobed, young parts, petioles, etc. clothed with glandular bristles . . . *J. gossypifolia*
Leaves pandurate form, plants non-bristly . . . *J. panduraefolia*

J. gossypifolia Linn. Sp. Pl. 1006, 1753, Parker, For. Fl. 461; Merr. Enum. 2. 449. Bot. & Raiz. 175. f. 108. Pl. 64.

A much-branched shrub. Stems grey-white to ash-coloured, with brown lenticels throughout. Young parts pale or deep purple. Petioles, leaf margins and young parts with numerous, fasciculed and branched, glandular bristles. Leaves 3 to 5-deeply lobed. Flowers purplish-reddish, monoecious. Capsules oblong, 3-lobed, brownish.

Uncommon. Introduced from Brazil, has become naturalized on the Ridge. Also planted in the hedges around gardens.

Flowers and Fruits : July-Sept.
J. K. Maheshwari 221; 1186, New Delhi Ridge.

J. panduraefolia Andr. Bot. Rep. 4. t. 267, 1799, Haines, Bot. Bih. & Or. 2. 402.

J. hastata Jacq. Enum. Pl. Carib. 32, 1760.

An erect, pretty, branched, small shrub. Leaves panduriform, distantly dentate below, abruptly acuminate. Flowers bright crimson, in long-peduncled, corymbose cymes.

Native of Cuba. Grown in gardens for ornament.

Flowers : Summer and rainy seasons.
J. K. Maheshwari 361.

Chrozophora Juss. corr. Benth. & Hook. f. nom. cons.

Erect herbs, ovaries and capsules clothed with stellate tomentum and silvery scales; stamens 5 . . . *C. verbascifolia*
Prostrate herbs, ovaries and capsules clothed with stellate tomentum only; silvery scales absent, stamens 15, in 2 whorls.
Leaves about as long as broad, eglandular at the base . . . *C. prostrata*

Leaves longer than broad, 2-glandular at the base

C. verbascifolia A. Juss. Euph. Tent. 28, 1824, Spreng. Syst. 3, 85, 1826 (*C. parvifolia*)

An erect scabrous shrub of deep-rooted [illegible] Leaves 4-5.7 × 1.5 cm, [illegible] racemes [illegible] crowded above, [illegible] below. Male flowers [illegible] Stamens 5. Capsules [illegible] with stellate hairs and silvery scales, 8 × 6 mm. Seeds black, wrinkled, glabrous.

A new record for Delhi State. Duthie in Fl. GP 3, 1.5 recorded this species from Mathura zone. Occurs near Hauz Khas on way to Mehrauli and in the neighbourhood of Najafgarh on sandy loam soil. The plant gives a characteristic dull bluish-white appearance from a distance.

Flowers and Fruits : May-Oct.
J. K. Maheshwari 335, 725

C. prostrata Dalz. in Dalz. & Gibs. Bomb. Fl. 233, 861, Fl. GP 3, 106 (*C. plicata* forma 3 Hook. f. in FBI 5, 410, 1887)

A prostrate or procumbent stellate-woolly herb, with many branches from the root. Leaves nearly as long as broad, often dark purplish-brown, eglandular at the base. Flowers unisexual, in few-flowered axillary racemes. Stamens 15 in 7 whorls. Capsules stellate-woolly without silvery scales, 6 × 5 mm.

Common in dried up ditches and canals, often forming a felt on the clayey ground.

Flowers and Fruits. May-June

C. parvifolia Klotz. ex Schwfth. Pl. Nilot. 11, 1862, Prain in Kew Bu. 91, 1918

A prostrate, spreading or ascending, stellate-woolly, deep-rooted herb. Branches many, often tinged toward reddish. Leaves 2.5-5 × 2-4 cm., 2-glandular at base, often dark purplish-brown above and irregular in shape, veins impressed above. Flowers in short, axillary racemes. Male flowers vermilion-coloured. Anthers yellow. Capsules stellate-woolly without silvery scales, 6 × 5 mm. Seeds convex outside.

Grows in dried ditches and canals, common in the dried up bottom of Najafgarh Drain on clayey soil, associated with *Heliotropium supinum* Linn., and *Coldenia procumbens* Linn.

Flowers and Fruits : May-June
J. K. Maheshwari 677

Croton Linn.

C. bonplandianum Baill. in Adans. 4 : 339, 1864, Croizat in JBNHS 41

572 1940 *C. bonplandianus* (sphalm.) Muell.-Arg. in DC Prodr 5 2 671 866
C. parviflorus (sphalm.) Morong (sphalm. auct. *C. parviflorum* Morong) in Ann N Y Acad Sci 7 221 893, Hanes Fl. Ba. Bha & Or 2 35 (Gamble Fl Pres Mad 2 1316.
Bot. Bha & Or 2 35 (Gamble Fl Pres Mad 2 1316.
For a correct name of this species, see Croizat (loc cit.)

A erect diffuse much branched annual, 30-90 cm high. Stems with mixed-armed trichomes, becoming sympodial. Leaves simple crenulate towards the tops of branches, 4-6 2-2.5 cm, lanceolate serrate, 2 glandular at the base. Inflorescence a terminal erect androgynous spike, female flowers below male ones. Male flowers pale white, stamens about 15. Female flowers with 2 extra-floral glands at the base of pedicels. Capsules 3-angled, roundish, stellate-hairy. Seeds shining spongy with a white cap, oblong.

A recently introduced weed in Delhi State. Native of S. America. Grows in abundance on fallow fields, dry unused lands, along roadsides etc. It has spread in almost all the suburbs of Delhi. Met commonly along the railway lines especially near Nizamuddin.

Local name : Kala bhangra
Flowers and Fruits : June-Sept.
J. K. Maheshwari 229, Azadpur; 288, Okhla

Ricinus Linn.

R. communis Linn. Sp. Pl. 1007, 1753, Royle, Ill. 328; FBI. 5 : 457, Merr. Enum 2 : 449, FLGP. 3 : 113; Parker, For. Fl. 461

An evergreen shrub or small tree. Leaves palmately lobed, peltate. Flowers in branching racemes. Male flowers occupying the upper portion, stamens numerous. Capsules 3-lobed, echinate. Seeds 3, oblong, mottled.

Cultivated in private and public gardens, commonly planted in urban areas near habitations and fields.

Local name : Arand [Castor]
Flowers and Fruits : Greater part of the year
J. K. Maheshwari 1003, Timarpur

Acalypha Linn.

Erect, mosaic-forming, green herbs; spontaneous . . . . . *A. indica*
Erect shrubs, leaves mottled with red and purple, a garden shrub . . . . . *A. wilkesiana*

A. indica Linn. Sp. Pl. 1003, 1753; Merr. op. cit. 446, FBI. 5: 416; FLGP. 3 108

An erect, herbaceous annual, 30-80 cm. high, with many spreading or ascending branches. Leaves membranous, 5×3.5 cm., ovate or rhomboid-

ovate, crenate-serrate, cuneate at base, arranged in a mosaic. Flowers minute, green, in lax erect axillary or leaf-opposed spikes, usually towards the top; females solitary or paired, each enclosed by a cup of 5-6 small bracts. Capsules 3, mounted by persistent bracts. Seeds [illegible] pale brown, shining.

Common as a garden weed in the shades of trees and shrubs; also found in waste places near gardens and in cultivated fields.

Flowers and Fruits : Sept.-June

J. K. Maheshwari 79

A. wilkesiana Muell.-Arg. in DC. Prodr. 15 817, 1866. Merr. [illegible] Dunlop, Man. Cult. Pl. 622.

A. tricolor Seem. Fl. Vit. 225, 1867.

A garden shrub. Leaves usually broad cordate, short acuminate, crenate, variously mottled with shades of red and purple. Spikes slender, 20 cm. or more in length, in fascinating, drooping festoons. Flowers small, bright red.

A common garden favourite, planted for hedges and fences around gardens and parks. Varieties *marginata* W. Muller, and *macrophylla* N. Taylor, are also grown in similar places.

Flowers : Jan.-July

J. K. Maheshwari 206, Qudsia Gardens.

Sapium P. Browne

S. sebiferum (Michx.) Roxb. Fl. Ind. 3 693, 1832, FBI 5 470, FLGP 3 116; Parker, For. Fl. 458.

Stillingia sebifera Michx. Fl. Bor.-Amer. 2 213, 1803, Royle 11 328.

Excoecaria sebifera Muell.-Arg. in DC. Prodr. 15(2) 1210, 1866; Brandis, For. Fl. 441.

A small, deciduous tree with a dense crown of foliage branching above. Bark grey, longitudinally grooved. Leaves 4.5-7 × 4-6.5 cm., broad rhomboid, acuminate; base deltoid.

Native of China. Planted in lawns, parks and gardens. A number of trees occur in Sabzimandi Gardens. The tree bears a striking resemblance to *Dalbergia sissoo* Roxb. in its foliage and can be easily mistaken for the latter when in a vegetative condition.

English name : Chinese tallow-tree

J. K. Maheshwari 1119, Rashtrapati Bhavan Compound

Putranjiva Wall.

P. roxburghii Wall. Tent. Fl. Napal 61, 1826, Royle, II. 347, t. 83 bis; Brandis, For. Fl. 451, t. 53; FBI 5 336, FLGP 3 99.

A moderate-sized or large evergreen tree. Branches drooping. Leaves obliquely elliptic-oblong to ovate, coriaceous. Flowers unisexual, yellow. Male flowers in dense axillary clusters. Female flowers 1-3. Stigma large, fan-shaped. Drupes ellipsoid, hoary.

Commonly planted in the hedges, shrubberies and lawns of gardens. Self-sown young plants are often met in waste places near gardens.

Local name: Pitraunia.

Male and female flowers: April-Aug. Fruits: Winter and summer seasons.

J. K. Maheshwari 293 (1947).

Securinega Juss. nom. cons.

Unarmed; leaves 2-4.7-5 cm long . . . . . *S. virosa*

Branches ending in spines; leaves usually not exceeding 2.5 cm . . . *S. leucopyrus*

S. virosa (Roxb. ex Willd.) Pax & Hoffm. in Engl. & Prantl, Nat. Pflam. (ed. 2) 19C: 60, 1931; Santapau in RBSI 16(1): 275, 1953.

Phyllanthus virosus Roxb. ex Willd. Sp. Pl. 4: 578, 1805.

Flueggea microcarpa Bl. Bijdr. 580, 1826; FBI 5: 328.

An erect, multi-branched, dioecious, unarmed shrub. Branches irregular, subhorizontal or ascending. Leaves 3.5-5.5 x 2-3 cm., variable in shape, usually obovate, otherwise elliptic, elliptic-ovate or obcordate, glaucous beneath. Flowers minute, greenish-yellow, in axillary clusters, the males numerous, stamens S. exserted, females 1-5 or more. Fruits globose, of 2 sizes, white, fleshy. Seeds 3-6, punctate.

Occurs on the Ridge, planted in hedges and near canal banks. Some shrubs planted in Roshanara Gardens appear to be quite different than those found on the Ridge.

Male flowers: June-Aug.

J. K. Maheshwari 94; 1118.

S. leucopyrus (Willd.) Muell. Arg. in DC. Prodr. 15(2): 451, 1866; Pax & Hoffm. in Engl. & Prantl, Nat. Pflam. (ed. 2) 19C: 60; Santapau in RBSI, 16(1): 275, 1953.

Flueggea (Fluggea) leucopyrus Willd. Sp. Pl. 4: 757, 1806; FBI 5: 328; FLGP, 3: 92.

Phyllanthus leucopyrus Koen. ex Roxb. Hort. Beng. 69, 1814, nom. nud.; & Fl. Ind. 3: 658, 1832.

A large, woody, much-branched, diffuse shrub. Branches white; branchlets spine-like, purplish when young. Leaves less than 2.5 x 1.5 cm., obovate, elliptic or obcordate, glaucous. Male flowers greenish-yellow, slender, pedicelled. Berries globose, white.

Uncommon, found on the Ridge and the neighbouring hilly tracts of Faridabad, in depressed areas. The male and female plants are often

seen together and form small dense patches at some places [illegible] themselves with *Grewia tenax* Fior. and *Cappa[illegible]* [illegible] grows on rocks also

Flowers July Sept

J. K. Maheshwari 210, Ridge 72[illegible] near Gy[illegible]

Melanthesa Bl.

M. rhamnoides (Retz.) Bl. Bijdr. 591, 1826. Wt. Ic. t. 189[illegible]

Phyllanthus rhamnoides Retz. Obs. 5 30, t. 30.

Breynia rhamnoides Muel. Arg. in DC. Prodr. 5 [illegible] 1866.

A large shrub or small glabrous tree. Branches [illegible] Branchlets flexuous, ascending spreading. Leaves [illegible] 1.5-2.5 cm. elliptic glaucous beneath, turning black when dry [illegible] bases easily detachable. Stipules subulate. Flowers greenish-yellow [illegible] very small. Male flowers usually in short pedicels. Female flowers solitary. Fruits globose, 6×6 mm., dull red or purple fleshy [illegible]

Introduced. Planted for ornamental hedges in gardens.

Flowers: Before and after rains

J. K. Maheshwari 1001, Nicholson Gardens

Phyllanthus Linn.

Filaments free, leaves oblong — *P. simplex*

Filaments united into a column

Stipules peltate; leaves obovate, wedge-shaped at base — *P. maderaspatensis*

Stipules not peltate; leaves thin, oblong the branching resembling pinnate leaf . . . . . — *P. fraternus*

P. simplex Retz. Obs. 5 29, 1788; FBI. 5 . 295, Merr. Enum. 2 . 395 FUGP. 3 : 97

An erect, prostrate or ascending, deep-rooted perennial, variable in appearance, much branched from base, up to 45 cm. tall. Branches spreading. Leaves 10-20 × 4-7 mm., oblong to obovate, distichous. Stipules peltate. Female flowers numerous solitary borne below males. Capsules 3×3 mm., globose. Seeds trigonous.

An occasional weed in cultivated fields, growing on sandy and loamy soils. Also found on the Ridge amongst the boulders in moist soils.

Flowers and Fruits : July-Sept.

J. K. Maheshwari 1109, Shahdara; 1185, Ridge

P. maderaspatensis Linn. Sp. Pl. 982 1753. FBI. 5 292. FUGP. 3 97.

An erect glabrous herb. Leaves distant, 1-2.5 × 0.5-[illegible] cm. usually cuneate-obovate, mucronate. Male flowers clustered, females solitary. Capsules depressed-globose, 3-lobed, 2.5 × 3 mm.

Rare

Local name : Hazarmani
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 770, Shahdara

P. fraternus Webster in Contr. Gray Herb. No. 176, 53, 1955.
P. niruri Hook. f. (non Linn.)

An erect, glabrous, shallow rooted annual, 30-60 cm. high, often below 10 cm. Branches spreading. Leaves simple, appear to be compound, 0.7 × 4.9 mm., oblong, distichous, often overlapping. Flowers yellowish, axillary, hanging down below the branchlets, males 1-3, females solitary. Capsules depressed-globose, smooth. Seeds trigonous, pale brown, longitudinally ribbed.

A common weed of gardens and cultivated fields during the rainy season. Also found on the Ridge as a herbaceous undergrowth and in the crevices of stones.

Local name : Dhadhan; Mokh, Nunki
Flowers and Fruits : June-Oct.
J. K. Maheshwari 125

Kirganelia Juss.

K. reticulata (Poir.) Baill. Étud. Gén. Euph. 613, 1858; Haines, Bot. Bih. & Or. 129.
Phyllanthus reticulatus Poir. in Lamk. Encycl. 5 : 298, 1804, FBI 5 : 288, FUGP 3 : 95.

A large diffuse or straggling, glabrous shrub. Branchlets drooping. Bark thin greyish-brown. Leaves 2-4 × 1-2 cm., oblong, elliptic or rotundate, glabrous. Male flowers purplish, in fascicles, disk glands pale yellow, stamens 5. Female flowers solitary, ovaries 5 to 10-celled. Berries globose, 7 × 6 mm., dark purple, smooth. Seeds 10 or less, trigonous, crustaceous, punctate, shining.

Introduced, grown in the hedges of garden shrubberies, fruit orchards, etc. Often spontaneous along irrigation channels. It forms an effective hedge along with *Capparis sepiaria* Linn., and other shrubs. Used medicinally.

Local name : Neelbari; Makki
Flowers and Fruits : April-July
J. K. Maheshwari 180, Roshanara Gardens

Emblica Gaertn.

E. officinalis Gaertn. Fruct. 2 : 122, 1790; Wt. Ic. t. 1896, Santapau in RBSI 16(1) : 277, 1953.
Phyllanthus emblica Linn. Sp. Pl. 982, 1753; FBI. 5 : 289.

A moderate-sized or large, deciduous tree. Bark peeling off in flakes. Leaves distichous, resembling pinnate leaves, 12-18 × 3-4 cm., narrowly linear. Flowers yellow, in axillary fascicles on lower leaves. Fruits fleshy, globose, pale yellow.

Native of tropical Asia. Cultivated in the fruit orchards for its fruits which are pickled, also planted in public parks, lawns and squares.

Local name : Amla, Aonla, Aola.
Flowers : March-May. Fruits : Cold season.
J. K. Maheshwari 1190, Safdarjang Tomb.

92. Ulmaceae

Flowers clustered, appearing before the leaves; fruit a samara . . . . . *Holoptelea*

Flowers appearing on young, leafy shoots; fruit a drupe . . . . *Celtis*

Holoptelea Planch.

H. integrifolia (Roxb.) Planch. in Ann. Sc. Nat. (ser. 3) 10 : 259, 1848; FBI. 5 : 481; Wt. Ic. t. 1968, Parker, For. Fl. 466.
Ulmus integrifolia Roxb. Pl. Cor. 1 : 56, t. 78, 1798, Stewart, Pun. Pl. 211.

A small or medium-sized, deciduous tree. Bark grey. Leaves 10-15 × 5-7 cm., broad ovoid or ovate, acuminate, subcoriaceous. Flowers green, in numerous fascicles on the leafless branches. Samaras oblique-elliptic to suborbicular, about 2.5 × 2 cm., notched at the apex, wing reticulately veined.

Some trees occur on the Ridge near Lover's Lane, New Delhi, and near Qutab. Also planted in gardens. The tree is leafless when fruiting. Stewart (loc. cit.) reports that the bruised leaves are applied to boils.

Local name : Papri.
Fruits : May.
J. K. Maheshwari 1191, Lodi Gardens.

Celtis Linn.

C. australis Linn. Sp. Pl. 1043, 1753, Brandis, For. Fl. 428, t. 50 & Ind. Tr. 595, FBI. 5 : 482 ; FUGP. 3 : 121; Parker, For. Fl. 467.

A medium-sized, deciduous tree. Bark grey. Trunk more or less cylindrical. Leaves 6-8 × 3-4 cm., obliquely ovate or elliptic, acuminate, entire or crenate-serrate, coriaceous; juvenile ones soft. Flowers pale yellow, polygamous, apetalous ; male and androgynous cymes usually at the base of the shoots, in lateral fascicles and short racemes; the females in the upper axils. Sepals with woolly margins, light purplish-tinged. Stamens 4, erect. Ovaries woolly, stigmas 2, large. Drupes ellipsoid or ovoid, rugose.

Planted in lawns and gardens for shade and fodder. The flowers and leaves appear simultaneously in March. The flowering period is very short and fruits are developed quickly.

Flowers: March-May. Fruits: June-Sept.
J. K. Maheshwari 631, 639. University Compound.

93. Moraceae

Flowers crowded in globose heads or on or inside fleshy receptacles; stamens straight in bud
- Flowers crowded on the outside of oblong or irregularly globose large receptacles — *Artocarpus*
- Flowers attached to the inner walls of a closed receptacle — *Ficus*

Flowers not crowded on or inside large, fleshy receptacle, but in spikes or heads; stamens reflexed in bud with reversed anthers
- Flowers in catkins or the female flowers subcapitate, perianth fleshy in fruit — *Morus*
- Male flowers in heads or spikes; females solitary or 2-4 per anth; not fleshy in fruit — *Streblus*

Artocarpus L. R. & G. Forst. nom. cons.

Fruit smooth, 5-10 cm. in diam., yellow, velvety — *A. lakoocha*
Fruit tubercled, very large — *A. heterophyllus*

A. lakoocha Roxb. Fl. Ind. 3: 524, 1832; Royle, Ill. 337; Brandis, For. Fl. 426 & Ind. Tr. 612; FBI 5: 543; FUGP 3: 141; Parker, For. Fl. 484.

An erect or bent, large, deciduous tree with a spreading crown. Bark fissured, dull black. Leaves large, 20-25 × 10-15 cm., elliptic, obovate or oblong, scabrous, entire or denticulate; stipules caducous. Flowers in axillary, glabrous, short-stalked heads. Male receptacles orange-yellow; flowers monandrous. Fruit clusters lobulate, nearly smooth, yellow when ripe. Achenes embedded in a fleshy receptacle.

Commonly cultivated in the Sabzimandi and Sarai Rohilla fruit orchards for its edible fruits, used either raw, cooked or as pickle.

Local name : Barhal
Flowers and Fruits : April-June
J. K. Maheshwari 1420, Gulab Bagh.

A. heterophyllus Lamk. Encycl. 3: 210, 1789; Bailey, Man. Cult. Pl. 338.
A. integrifolius auct. (non Linn. f.)
A. integra auct. (non Merr.).

A fairly large, evergreen tree. Leaves elliptic to obovate, coriaceous,

10-20 × 10-13 cm. Stipules large caducous. Male heads cylindric, females cylindric, tubercled and very large, mostly hanging on the trunk and old branches. Seeds red ripe.

Cultivated in the fruit orchards and elsewhere for the sake of edible large fruits.

Local name : Kathal
Flowers and Fruits : May-June
J. K. Maheshwari 1417, Gulab Bagh

Ficus Linn.

Leaves cupuliform . . . . . *F. krishnae*
Leaves not cupuliform, but broad ovate, elliptic, lanceolate to obovate
Receptacles sessile
Leaves tomentose or pubescent beneath, at least when young
Leaves obtuse ; receptacles globose, puberulous, red when ripe . . . . . *F. benghalensis*
Leaves shortly, abruptly acuminate ; receptacles oblong to subovate, nearly glabrous, orange-red when ripe . . . . . *F. drupacea* var. *pubescens*
Leaves glabrous .
Lateral and secondary nerves close, fine and parallel ; receptacles always paired :
Receptacles bright orange-yellow , lateral basal nerves of leaf spreading parallel to the secondary nerve . . . . *F. benjamina* var. *comosa*
Receptacles whitish or purplish ; lateral basal nerves obliquely . . . . . *F. microcarpa*
Lateral nerves not close and parallel .
Leaves acute or shortly, bluntly cuspidate . . . . *F. tsiela*
Leaves acuminate or caudate :
Leaves broad ovate or ovate-round :
Leaves terminating at the apex in a slender tail about half the length of the blade . . . . *F. religiosa*
Leaves not caudate, but narrowed at the apex into a cusp about one-fourth the length of the blade . . . . . *F. rumphii*
Leaves ovate-oblong, elliptic or ovate, abruptly acuminate . . . . . *F. virens* var. *sublanceolata*
Receptacles stalked ;
Receptacles in clusters on short, special branches . . . . *F. glomerata*
Receptacles solitary or paired
Medium-sized or large trees , leaves ovate or oblong-ovate , receptacles whitish, tinged red and dotted . . . . . *F. virens* var. *virens*

Woody shrubs or small trees; leaves orbicular-ovate entire or 3 to 5-lobed receptacles yellow or yellowish purple when ripe
Leaves usually broad or orbicular-ovate, sometimes lobed, branchlets tomentose . . . . . *F palmata*
Leaves generally lobed, branchlets pubescent or glabrous . . . . . *F carica*

F krishnae C DC in Bot Mag t 8092, 1906, Bentham, Trees Cale 4 6

A small or medium-sized tree, much-branched above the ground Bark dull white Trunk with distant horizontal wrinkles Leaves cordiform long-petioled, green above pale yellow beneath prominently nerved Receptacles 1 5×1 4 cm

Planted in gardens, lawns and squares

English name: Krishna's buttercup
J. K. Maheshwari 1133

F benghalensis Linn. Sp. Pl. 1059, 1753; Brandis, For. Fl. 412 & Ind Tr 600 FBI 5 499, FUGP 3 147, Santapau in RBSI 16 289, 1953.

F indica Linn Sp Pl 1060, 1753 emend. Lamk Encycl 2 494, 1788 (non King, 1887)

A large evergreen tree, extending laterally by sending down aerial roots from the branches Leaves 12-15×10-12 cm., ovate, orbicular-ovate to elliptic coriaceous, entire Receptacles axillary, sessile, paired, globose, red

Commonly planted along roadsides, in lawns and gardens Young seedlings are often met in the crevices of the boundary walls of bungalows

Local name: Bargad, Barh; Barota
Flowers: June-Sept
J. K. Maheshwari 178

F drupacea Thunb. var **pubescens** (Roth) Corner in Gdns Bull Singapore 17 381, 1960.

F mysorensis var *pubescens* Roth in Roem & Schult. Syst 1, 508, 1817

F mysorensis Heyne ex Roth Nov Pl. Sp. 390, 1821, FBI 5 500

A handsome, shady tree with few aerial roots Leaves 15-20×9-11 cm ovate to ovate-elliptic, shortly abruptly acuminate, prominently nerved beneath Receptacles sessile, in axillary pairs, 2 2×1 8 cm oblong to subovate nearly glabrous, orange-red when ripe

Planted in public gardens and lawns.

F benjamina Linn var **comosa** King, Sp Fic 44, 1887; Bailey, Stand Cycl Hor 1233

F. comosa Roxb. Pl. Cor. 2: 14, t. 125. 1799

A large, evergreen ornamental tree with a spreading crown and drooping branches. Leaves 6.2-12.5 × 2.5-6.2 cm., coriaceous, smooth, shining, elliptic-ovate, ovate, obovate, acuminate, obliquely pointed, entire. Receptacles axillary, solitary or paired, sessile, orange-yellow when ripe, male, female and gall flowers in the same receptacle. Achenes ovoid-reniform.

A graceful, evergreen tree, planted in gardens, lawns and squares. The receptacles become attractive at maturity.

Receptacles: Oct.
J. K. Maheshwari 736, Lodi Gardens.

F. microcarpa Linn. f. Suppl. 442. 1781; Corner in Gdns. Bull. Singapore 17: 397, 1960.

F. retusa auct. (non Linn.)

A large or medium-sized, evergreen, glabrous tree with a dense crown. Bark dark grey. Leaves 7-9 × 3.5-5 cm., elliptic, ovate or obovate, rounded or bluntly acuminate, polished, glossy, nerves not prominent. Receptacles about 6-9 × 6-9 mm., sessile, paired, depressed-globose, smooth, yellowish-reddish, subtended by 3, persistent bracts.

Commonly planted along with *F. virens* Ait. var. *virens*, and *F. virens* var. *subulanceolata* Corner as an avenue tree, along several streets of New Delhi. Also planted in lawns and gardens. It provides an abundance of cool shade by its crown of dense foliage.

Receptacles: March-Oct.
J. K. Maheshwari 532.

F. tsiela Roxb. Hort. Beng. 66, 1814, nom. nud. & Fl. Ind. 3: 549, 1832; King, op. cit. 59, tt. 73, 84; FBI. 5: 515.

A glabrous, spreading tree (stunted in the area) without aerial roots. Bark smooth, greenish-white. Leaves coriaceous, 10-14 × 5-8 cm., broad ovate, entire, smooth, with a thickened marginal nerve; petioles one-third to half as long as the lamina. Receptacles crowded at the ends of branches, 13 × 10 mm., top-shaped, sessile, paired, smooth. Male flowers sessile, gall flowers pedicellate. Fruits ovate-reniform.

Planted in gardens, lawns and squares.

Receptacles: Oct.
J. K. Maheshwari 737.

F. religiosa Linn. Sp. P. 1059. 753; Roxb. III. 337; Brandis, For. Fl. 415 & Ind. Tr. 601; King, op. cit. 55, t. 67 A; FBI. 5: 513; Merr. Enum. 2: 63; FUGP. 3: 150; Santapau in RBSI. 16(1): 29, 1953; *Urostigma religiosum* Gasp. Ric. Capriff. 82, t. 7, ff. 1-5, 1845; Wt. Ic. t. 1967.

A large or medium-sized glabrous tree. Bark grey. Branches

[illegible] aerial roots. Leaves 10-15 × 10-12 cm., ovate-round, [illegible] apex long-tailed. Receptacles sessile, [illegible] 10 × 8 mm., depressed globose, dark purple when ripe. [illegible] commonly planted along the roads [illegible] parallel to [illegible] River. Also near in villages near temples and as an ornamental tree [illegible] dark red and shining appears about the middle of March. It [illegible] tree for Hindus. The insect found in [illegible] *religiosa* is a new species *Blastophaga quadraticeps*.

Local name : Pipal
Receptacles : April-June
J. K. Maheshwari 179

F. rumphii B. ex King, 437, 1824; King, Sp. Fic. Sol. 1, 620; FBI 5, 519; Bl. Fl. Ind. Tr. 601 & 717; FUGP 3, 151; Santapau, [illegible] 293.

F. cordifolia Roxb. Fl. Ind. 3, 548, 1832 (non Bl.); Blume, [illegible] Fl. 416, t. 48.

Urostigma cordifolium Miq. in Hook. Lond. Jour. Bot. 6, 564, 1847.

A small or medium-sized, deciduous tree. Bark smooth, grey. Leaves glabrous, shining, 10-15 × 8-10 cm., broad ovate, [illegible] base. Receptacles sessile, paired, axillary, from old leaf scars, globular, 15 × 14 mm., smooth, whitish.

Planted in lawns and gardens.

Receptacles : May-June.

F. glomerata Roxb. Pl. Cor. 2 : 13, t. 123, 1799 & Fl. Ind. 3, 558; Royle 111, 337; Brandis, For. Fl. 422, t. 49 & Ind. Tr. 609; King, Sp. Fic. 73, t. 218 A; FBI 5, 535; FUGP. 3, 160; Santapau in RBSI 16(2), 293, 1953.

F. gaolereea Roxb. Fl. Ind. 3 : 538, 1832.

Covellia glomerata Miq. in Hook. Lond. Jour. Bot. 7, 465, 1848.

A small or medium-sized or large, deciduous tree. Bark smooth, dull white or reddish-brown. Trunk with distant horizontal lines, nearly circular. Leaves 10-15 × 6-7 cm., ovate, ovate-oblong to elliptic-lanceolate, glabrous, prominently nerved beneath. Stipules scarious, ovate-lanceolate. Receptacles clustered, on short, leafless branches, 2.4-2.5 cm., top-shaped to nearly globular, reddish, with a sweet flavour.

Planted in gardens and villages. The fruit is eaten raw or cooked. The leaves are much used as cattle fodder and frequently sold in the market. Planted along the Western Jamuna Canal, near village Bawana and along the Bodarpur-Mehrauli Road.

Local name : Gular
Receptacles : April-July
J. K. Maheshwari 16

F. virens Ait. Hort. Kew 3 : 451 1789 ; Corner in Gdns. Bull. Singapore [illegible]

F. [illegible] Willd. [illegible] Roxb. Fl. Ind. 3 : 551, 1832 ; FBI 5 : 515

Var. virens

F. [illegible] var. lanceolata King, Sp. Fic. 63, t. 76, 1887 ; FBI 5 : 516

[illegible] distinguished chiefly by its pedunculate receptacles and [illegible] leaves.

A common avenue tree along several streets in New Delhi. A [illegible] used in gardens, lawns and squares for shade.

Local name : Pilkhan
Receptacles : Sept.-Dec.
J. K. Maheshwari 531, Queensway Avenue

Var. sublanceolata (Miq.) Corner in Gdns. Bull. Singapore 17 : 377, 1960

F. [illegible] Bl. var. *sublanceolata* Miq. in Ann. Mus. Bot. Lugd. Bat. 3 : 260, 1867

A large or medium-sized, spreading, deciduous tree, quick-growing. Bark smooth, greenish-grey. Leaves thinly coriaceous, glabrous, 9-15 × 6-9 cm., ovate to ovate-oblong, abruptly acuminate, 3-nerved. Receptacles sessile, axillary, paired, pubescent, globose, whitish flushed with red, dotted when ripe.

Planted as an avenue tree along the streets of New Delhi.

Local name : Pilkhan
Receptacles : Oct.-Dec.

F. palmata Forsk. Fl. Aegypt.-Arab. 179, 1775 ; King, Sp. Fic. 146, t. 185 ; FBI 5 : 530 ; Brandis, Ind. Tr. 607, 718 ; FUGP. 3 : 158.

F. caricoides Roxb. Fl. Ind. 3 : 529, 1832.

F. virgata Roxb. op. cit. 530 ; Royle, Ill. 337 ; Brandis, For. Fl. 419.

An erect, woody shrub or small tree, similar to the cultivated fig. Bark dull grey. Young parts tomentose. Leaves 10-15 × 8-11 cm., orbicular or broad ovate, usually dentate or serrate, base 3-nerved. Receptacles axillary, solitary, pubescent, about 2 × 1.5 cm., subglobose or pyriform, yellow.

Common in hedges and along irrigation channels passing through the fruit orchards. Also found in waste places near gardens, etc. The latex is said to be employed in preparation of curd.

Local name : Anjir, Kambar, Khat gulen, Patgulen
Receptacles : Feb.-July
J. K. Maheshwari 8, Roshanara Gardens, 527, 838, near Qutab

F. carica Linn. Sp. P. 1059, 1753 ; Parker, For. Fl. 482 ; Merr. Enum. 2 : 47 ; Bailey, Man. Cult. Pl. 339

A small tree or bush branching from the base Bark smooth, grey or dull white. Trunk with distant, horizontal wrinkles Leaves about 20 15 cm broad ovate to nearly orbicular or 3 to 5-lobed, cordate, crenate serrate Receptacles solitary or paired axillary about 2 5 2 2 cm, globose or pear shaped yellowish-purple when ripe

Native of Mediterranean Region Cultivated in gardens for its ornamental

Local name Phakwada Anjir

Receptacles Jan April Ripe Figs, June-Oct

J K Maheshwari 586 Kingsway Camp Gardens

Ficus elastica Roxb Hort Beng 65, 1814, nom. nud. & Fl Ind 3 : 541 53, FBI 5 508 King, op cit 45, t 54, Santapau in RBSI 6(1) 294, 1953.

A small or medium sized, glabrous, evergreen tree Leaves 15-18 × 7-8 5 cm, usually elliptic, deep glossy-green Stipules about half as long as lamina Receptacles paired in old axils, sessile

Grown in its juvenile state as a pot- or tub-plant in gardens, greenhouses and living rooms

J K. Maheshwari 1436

Morus Linn

Leaves acute, styles short, free, glabrous or slightly hairy *M alba* Leaves long-acuminate, styles long, hairy, connate below. *M indica*

M. alba Linn Sp. Pl 986, 1753; Rovle, Ill. 336, Roxb Fl Ind 3 594, Brandis, For Fl 407, t. 47 & Ind. Tr. 612, FBI 5 492, Parker, For Fl 473, FUGP. 3 : 137 ; Merr Enum. 2 : 36

A small or medium-sized, deciduous tree. Leaves broad ovate, dentate or lobed, cordate Flowers monoecious. Male spikes catkin-like, elongate Female spikes short, ovoid. Fruits white or dark purple, turning black when ripe, sweet.

Cultivated in gardens, lawns and hedges, for its edible catkins. The young leaves and flowers appear in February Leaves are used as fodder Common on the Grand Trunk Road as a roadside tree

Local name : Toot

Flowers : Feb.-March. Fruits : May-June

J K. Maheshwari 645 ; 968 ; 1015 ; 1230

M. indica Linn. Sp Pl. 986, 1753 ; Brandis For Fl 408 & Ind Tr 612 FBI 5 492 ; FUGP. 3 136.

A deciduous tree or large shrub Leaves ovate, coarsely serrate, 4-15 cm long Male spikes lax. Female spikes short, ovoid. Fruits dark purple at maturity.

Cultivated in gardens for its fruits.

Local name : Shehtut
Flowers and Fruits : Feb.-May

Streblus Lour

S. asper Lour. Fl. Cochinch. 2 : 615, 1790 ; Brandis, For. Fl. 410 & Ind. Tr. 615 ; FBI. 5 : 489 ; Merr. Enum. 2 : 98 ; Title : 3 : 19 ; Parker : 483.

Trophis aspera Retz. Obs. 5 : 30, 1788 (excl. syn.) ; Roxb. Fl. Ind. 3 : 761.

A small, often gnarled evergreen tree, up to 6 m. high, sometimes shrub, branching from base. Bark whitish. Branches erect, very [illegible]. Leaves elliptic or rhombic or obovate, acute or acuminate, rough margins, subcrenate.

Rare ; met in the hilly tracts near Gurukul, Faridabad and along railway lines. The flowers and fruits could not be observed. Cows like this plant. Also used in skin diseases.

Local name : Chortya, Papai
J. K. Maheshwari 716, 812

Broussonetia papyrifera Vent. Tabl. Regn. Vegét. 3 : 547, 1799 ; Royle Ill. 340 ; Brandis, For. Fl. 410 & Ind. Tr. 613 ; FBI. 5 : 490 ; FUGP. 3 : 162.

A small, quick-growing, spreading tree. Branchlets [illegible]. Leaves rather sticky, 3-nerved, obliquely ovate or oblong, entire or lobed, serrate. Flowers dioecious. Male spikes cylindric, peduncled.

Planted.

Male flowers : Feb.-April
J. K. Maheshwari 1385

94. Cannabinaceae (Cannabiaceae)

Cannabis Linn.

C. sativa Linn. Sp. Pl. 1027, 1753 ; FBI. 5 : 487 ; FUGP. 3 : 124 ; Santapau in RBSI. 16(1) : 295, 1953.

A robust, herbaceous or shrubby, smelling annual. Leaves 3 to 8-foliolate, long-petioled, lobes lanceolate. Flowers dioecious. Male plants : flowers in axillary short panicled cymes. Female plants : flowers crowded with leafy bracts. Style arms 2, filiform. Nuts crustaceous.

Common in waste grounds, along roadsides and in the undergrowth of fruit orchards near Sabzimandi and Sarai Rohilla, often becoming gregarious along the edges of fields and irrigation channels of gardens. The male plants are found more commonly than the female plants.

Local name : Bhang
Flowers and Fruits : Cold season
J. K. Maheshwari 48, Timarpur

95. Casuarinaceae

Casuarina Linn.

C. equisetifolia Linn. Amoen. Acad. 4 : 143, 1759 (*equisetifolia*) ; F.B.I. 5 : 598 ; Merr. Enum. 2 : 1 ; FUGP 3 : 162 ; Santapau : RBSI 16(1) : 295, 1953. *C. muricata* Roxb. Fl. Ind. 3 : 519, 1832.

A narrow, tall, leafless, weak tree. Branches drooping. Branchlets very slender, rush-like, with whorls of 6-8 scales, similar to the twigs of *Equisetum* (hence the name equisetifolia). Male spikes cylindric 2.5 × 0.4 cm., usually numerous at the ends of branches. Female flowers in globose or ovoid 2.5 × 1.8 cm. heads becoming cone-like. Nutlets thin, winged.

Planted as an avenue tree along some streets, one can be seen behind High Transmitter Power Station, Coronation Memorial, Radio Colony. Also planted in lawns and gardens. It is not suitable as an avenue tree.

Local name : Vilayti jhau
Flowers : March-May. Fruits : June-July
J. K. Maheshwari 196

96. Salicaceae

Salix Linn.

S. tetrasperma Roxb. Pl. Cor. 1 : 66, t. 97, 1798 & Fl. Ind. 3 : 573, 1832 ; Royle Ill. 343 ; Brandis For. Fl. 462, t. 58 & Ind. Tr. 636 ; F.B.I. 5 : 626 ; Merr. Enum. 2 : 22 ; FUGP 3 : 166 ; Santapau in RBSI 16(1) : 296, 1953.

A large, much-branched, leafy shrub or small tree. Bark rough. Leaves 8-15 × 3.5-4.5 cm., ovate-lanceolate to lanceolate, glaucous beneath, serrulate. Flowers after the leaves. Male catkins 5-10 × 1-1.5 cm., yellow, scented.

Common along the banks of Okhla and Hindan Canals, probably planted. The male plants are propagated by cuttings which possess dormant buds. Female plants are found near Aligarh but not in Delhi.

Male flowers : Nov.-March
J. K. Maheshwari 552

97. Ceratophyllaceae

Ceratophyllum Linn

C. demersum Linn. Sp. Pl. 992, 1753, FBI 5 639; Merr Enum 3 141, FUGP. 3 : 168; Santapau in RBSI 16(1) 296 1953
C. verticillatum Roxb Fl Ind 3 634 1832

A slender, submerged rootless much branched aquatic Leaves whorled divided into filiform brittle, serrate segments Male and female flowers solitary Nutlets ovoid or ellipsoid, coriaceous, small, the persistent, subulate style subtended by a short, basal spine on either side

Common in the still water of ponds, ditches or shallow canals

Flowers and Fruits : After rains
J. K. Maheshwari 195 ; 267

CLASS II. MONOCOTYLEDONES

98. Hydrocharitaceae

Leafy, branched herbs with stems, leaves small — *Hydrilla*
Stemless, stoloniferous herbs; leaves long, ribbon-like — *Vallisneria*

Hydrilla Rich.

H. verticillata (Linn f) Royle Ill. 376, 1839, FBI 5. 659, Merr Enum. I : 26; FUGP. 3 : 173.
Serpicula verticillata Linn. f Suppl. 416, 1781.
Vallisneria verticillata Roxb. Fl. Ind. 3 : 751, 1832.

A slender, leafy, submerged, freshwater herb, appearing like *Elodea canadensis* Michx., and forming large masses Leaves opposite or whorled, oblong-linear to linear, apiculate, spreading in water Male flowers pedicellate, solitary, in a spathe females sessile

Common and abundant in still or slowly running water of ponds, ditches and canals.

Flowers : Sept.-Nov.
J. K. Maheshwari 503

Vallisneria Linn.

V. spiralis Linn Sp. Pl 1015, 1753, FBI 5 660, FUGP 3 174, Bailey, Man. Cult Pl. 132; Santapau in RBSI 16(1): 297, 1953

A submerged, tufted, dioecious perennial, at the muddy bottom of water. Leaves radical, up to 40 × 1 cm, linear, erect Male flowers several, minute, in short-stalked spathes, floating to the surface at

anthers. Female flowers solitary on a very long flexuous or spiral, leafless scape which gets coiled after pollination.

Common at the bottom of ponds, ditches and canals.

Flowers and Fruits : Aug.-Oct.

J. K. Maheshwari 554

99. Orchidaceae

Zeuxine Lindl. emr. Roep.

Z. strateumatica (L.) Schltr. Orch. Deutsch. N. Guin. 77. 1914; Holttum, Fl. Mal. I : 131.

Orchis strateumatica Linn. Sp. Pl. 943, 1753.

Zeuxine sulcata Lindl. Gen. & Sp. Orch. 485. 1840; FBI 6 : 106.

A slender terrestrial herb, usually 5-10 cm tall. Leaves 5-10 × 0.4 cm, near a gynobase passing into linear bracts. Flowers pink in densely flowered 2.5 × 1 cm racemes. Bracts ovate-lanceolate, acuminate, much longer than the ovary. Petals forming with the dorsal sepal a hood to the column. Capsules ellipsoid.

Rare. Collected in a flowering state from the moist, turfy ground behind the Botany Division, I.A.R.I., and along the 'bunds' of fields near village Gheora. Often escapes notice due to its small size and its being hidden amongst the grasses.

Flowers : Feb.-March.

J. K. Maheshwari 1409

100. Musaceae

Musa Linn.

M. paradisiaca Linn. Sp. Pl. 1043, 1753; Moore in Baileya 5 : 185. 1957.

M. paradisiaca Linn. subsp. *sapientum* (Linn.) K. Schum. in Pflanzenfam. 4(45) : 20, 1900; Cooke, Fl. Pres. Bomb. 2 : 742.

M. paradisiaca Linn. var. *sapientum* Kuntze, Rev. Gen. 2 : 692, 1891; Bailey Man. Cult. Pl. 286.

M. sapientum Linn. Syst. 1303, 1759; FBI 6 : 262.

A stoloniferous plant, 2.5-3.6 m tall. Leaves large, oblong, erect or ascending. Spikes drooping, about as long as the leaves. Bracts many-flowered, deciduous. Flowers 60 × 7 mm. Fruits oblong, yellowish-green when ripe, sweet, edible. Seeds brownish-black (if present).

Planted by suckers in fruit orchards and garden shrubberies near houses on moist soil. It grows well in Delhi and is used as vegetable. The stems and flowers are also eaten after cooking. Once planted, it requires little care.

Local name : Kela
Flowers : April-June Fruits Rainy season
J. K. Maheshwari 228

101. Zingiberaceae

Anther filament elongated : inflorescence not cone-like . *Alpinia*
Anther filament short inflorescence cone-like . *Zingiber*

Alpinia Roxb. nom. cons.

A. speciosa (Wendl.) K. Schum. Fl. Kaiser-Wilhelmsl. 29, 1887 & in Bot. Jahrb. 15 : 4 : 8 : 893. Bailey, Man. Cult. Pl. 289.
Zerumbet speciosum Wend., Sert. Hanov. 4 : 3 : t. 19 : 1798.
Alpinia nutans Roscoe in Sm. Exot. Bot. 2 : 93, t. 106, 1805 & in TLS. 8 : 346, 1807.

An erect, leafy shrub, 1-2 m tall. Leaves large, oblong-lanceolate, glabrous, shining. Flowers white, tinged with rosy or purplish, fragrant, 3×1.5 cm., in 15-30 cm. long, terminal thyrses, at length nodding. Bracts large, white. Calyx cylindric, 3-toothed. Stamen 1, white. Staminodes 2. Ovaries embedded in a densely hairy torus.

One of the loveliest ornamentals with a striking, piquant odour in leaves and flowers. Planted in the hedges of Rajghat, Safdarjang Tomb and other public parks and fruit orchards.

Local name : Elaichi
Flowers : March-May
J. K. Maheshwari 652

Zingiber Boehm. nom. cons.

Z. officinale Roscoe in TLS. 8 : 358, 1807. Duthie & Fuller, Field & Gard. Crops 3 : 47, t. 100. Bailey, Man. Cult. Pl. 288.

A herb with a thick, tuberous, aromatic rootstock. Stems leafy, about 1 m. high. Leaves linear-lanceolate to lanceolate, sessile, sheathing at the base.

Cultivated for the rhizome which provides ginger.

Local name : Adrak
J. K. Maheshwari 1451

102. Amaryllidaceae

Crinum Linn.

C. defixum Ker-Gawl. in Quart. Jour. Sci. 3 : 105. 1817. FBI. 6 : 28. FUGP. 3 : 248. Prain, Beng. Pl. 1061. Cooke, Fl. Pres. Bomb. 2 : 749.

C. asiaticum Roxb. Fl. Ind. 2 : 127, 1832 (non Linn.)

A stemless leafy herb or undershrub. Leaves erect, linear, concave, large. Flowers white, large, in umbels on a long stout scape. Perianth tube equalling the spreading, linear or linear-lanceolate lobes. Filaments free. Anthers linear. Fruit subglobose.

Commonly planted as hedges around gardens, near temples, etc.

Local name : Sukhdarshan

Flowers : Oct.-Dec.

J. K. Maheshwari 853

103. Agavaceae

Leaves usually spine-edged	*Agave*
Leaves mostly entire	*Yucca*

Agave Linn.

Leaves in a close globose rosette, never exceeding 90 cm. in length . . .	*A. wightii*
Leaves in a lax rosette or tufted, never less than 90 cm. in length	*A. mexicana*

A. wightii Dr. & Prain in Agric. Ledger 13(7) : 91, 1906 (sub Litt. J), FUGP 3 : 244, Parker, For. Fl. 512.

Trunk stout, usually conspicuous. Leaves ensiform, linear-lanceolate, up to 100 × 10 cm., many, forming a stiff rosette; marginal prickles spreading or erect, with a small, brown cushion, sharply recurved and parallel to the leaf edge; terminal spine pale, decurrent.

Commonly planted as a hedge along the 'bunds' of gardens.

A. mexicana Dr. & Prain in Agric. Ledger 13 (7) : 88, 1906 (sub Litt. F), FUGP 3 : 243.

Duthie in FUGP (loc. cit.) records this species in the arid strip between Gwalior and Delhi under *A. cantala*. Apparently it is the first Agave to reach India from the Pacific coast of C. America.

Yucca Linn.

Y. gloriosa Linn. Sp. Pl. 319, 1753, Bailey, Man. Cult. Pl. 241.

A stemless or shortly trunked plant. Leaves 60-75 × 2 cm., entire, yellow-edged, mostly clustered in rosettes at surface of ground, flat with margins raised, apices needle-pointed, red. Inflorescence an erect, long panicle with alternate branches, usually overtopping the leaves. Flowers greenish-white, produced in profusion on a solitary, central scape, drooping, bell-shaped, hermaphrodite. Perianth lobes waxy in texture. Stamens 6, embracing the ovary. Styles connate forming a central canal; stigmas 3, each bilobed and forming a stigmatic chamber below.

The plant is of great botanical interest. It flowers only at intervals of several years. It has been planted on the borders of public and private gardens.

Flowers March. August.
J. K. Maheshwari 1434

104. Dioscoreaceae

Dioscorea Linn.

D. bulbifera Linn. Sp. Pl. 1033, 1753. Santapau in JBNHS. 49: 628, 1950. *D. sativa* Thunb. Fl. Jap. 151, 1784. FBI. 6: 295 (excl. *D. cliffortiana* auct., non Linn.).

A climbing, herbaceous perennial with long, tuberous roots. Leaves ovate, cordate, acuminate, alternate. Stems with small, globular tubers, twining to the left.

Cultivated on a small scale in gardens for its tubers which are eaten as vegetable. A variety, said to be grown in Delhi, ripens its tubers after one year.

Local name : Ratalu.
J. K. Maheshwari 1449

105. Liliaceae

Plants with thorn-edged, basal rosettes of succulent leaves . . . *Aloe*
Plants not as above
  Habit climbing or straggling, leaves absent; stems modified into Linear or needle-shaped leaves (cladodes) . . . *Asparagus*
  Habit erect; leaves normal
    Flowers in heads or umbels on long scapes; cultigens . . . *Allium*
    Flowers racemose; plants wild
      Bulbiferous herbs, leaves appearing after the flowers . . . *Urginea*
      Non-bulbiferous herbs, leaves and flowers contemporary . . . *Asphodelus*

Aloë Linn.

A. barbadensis Mill. Gard. Dict. n. 2, 1768.
A. perfoliata var. *vera* Linn. Sp. Pl. 320, 1753.
A. vera (Linn.) Webb & Berth. (non Mill.).

Nearly acaulescent, stoloniferous plant, the leaf rosettes arising from the ground, up to 60 cm. high. Leaves erect, numerous, thick, glaucous-

green, lanceolate, long-acuminate, thorn-edged. Flowers very [illegible]-coloured, in simple erect racemes, the lower flowers falling off as the racemes elongates. Stamens equalling the perianth.

Grown in gardens as a bed- or pot-plant for its peculiar foliage.

Flowers : March-April.
J. K. Maheshwari 966.

Asparagus Linn.

A. racemosus Willd. Sp. Pl. 2 : 152, 1799; FBI. 6 : 316; FUGP. 3 : 259, Parker, For. Fl. 520.

A straggling or scandent, much-branched, spinous herb or shrub. Stems woody, grey white. Spines suberect or subrecurved. Cladodes 2-6 together, narrowly oblong-linear, falcate. Flowers small, white in solitary or fascicled, simple or branched racemes. Berries globose, produced when leafless.

Wild on the Ridge as well as in the neighbouring hilly tracts of Gurgaon. The plant was observed to produce abundant fruit near Gurukul (Faridabad).

Local name : Satawar ; Phusar.
Flowers : During rains. Fruits : Cold season.
J. K. Maheshwari 215; 824.

Allium Linn.

Leaves cylindric and usually fistular . . . . *A. cepa*
Leaves plane, flat or keeled, not hollow
Bulbs long, cylindric, simple; heads bearing flowers only . . . . *A. porrum*
Bulbs short, compound, heads bearing both flowers and bulbils . . . . *A. sativum*

A. cepa Linn. Sp. Pl. 300, 1753, FBI. 6 : 337; FUGP. 3 : 267.

Bulbs large. Leaves radical, hollow, bifarious. Flowers many, white, in dense umbels with both flowers and bulbils, subtended by 2 or 3 reflexed bracts. Stamens exserted.

Cultivated as a cold season crop in some parts of the district.

Local name : Piyaz; English name : Onion.
Flowers : Nov.-Feb.
J. K. Maheshwari 1076.

A. porrum Linn. Sp. Pl. 295, 1753, Bailey, Man. Cult. Pl. 246.
A. ampeloprasum Linn. Sp. Pl. 294, 1753, FBI. 6 : 337; FUGP. 3 : 267.

A stout, tall plant. Bulbs long, cylindric, simple. Leaves flat, keeled

Flowers many, pinkish, in dense, terminal umbels. Anthers [illegible] Filaments 2-toothed.

Cultivated during the cold seasons for its [illegible]

English name : Leek
Flowers : Cold season
J. K. Maheshwari, cultivated in gardens

A. sativum Linn. Sp. Pl. 296, 1753; FBI 6 : 332 ; FUGP 3 : [illegible]

[illegible] with bulbs enclosed [illegible] white or [illegible] Leaves flat. Flowers [illegible] spaced by bulbs [illegible] pink [illegible] long, terete scape exceeding the leaves. Anther [illegible]

Cultivated during the cold season.

Local name : Lahsun; Lasun : English name : Garlic
J. K. Maheshwari 1452

Urginea Stein.

U. indica (Roxb.) Kunth, Enum. 4 : 331, 1843; FBI 6 : 347; FUGP 3 : 264; Santapau in RBSI 26(1) : 322, 1953.

Scilla indica Roxb. Fl. Ind. 2 : 147, 1832.

A bulbiferous herb. Bulbs 6-8 × 4-6 cm., ovoid. Leaves appearing after the flowers, radical, linear, acute, nearly flat, spreading on the ground. Flowers pale brown, 12 × 5 mm., distant, drooping or spreading along erect, brittle scapes, caducous, when leafless. Capsules oblong, triquetrous, loculicidal. Seeds black, margined, 6×3.5 mm.

Uncommon, found on the Ridge in small patches amongst stones or on gravelly soil in open places or shade of shrubs. The flowers appear during the hot summer months, followed by leaves during the monsoon period. The bulbs possess cardiac stimulant and diuretic properties.

The plant reported by Col. C. T. Bamber from Delhi, in Plants of the Punjab, p. 441, 1916 as *Dipcadi montanum* appears to be the above species from its description.

Local name : Jangli piyaz
Flowers and Fruits : March-May
J. K. Maheshwari 1080, Old Delhi Ridge

Asphodelus Linn.

A. tenuifolius Cav. in An. Cienc. Nat. 3 : 46, t. 27, f. 2 : 1801; FBI. 6 : 332; FUGP 3 : 265.

An annual, stemless herb, variable in size. Leaves 15-40 × 3-5 cm., terete, hollow. Scapes several, simple or branched in the upper part, 30-60 × 1 cm. Flowers whitish, in lax racemes. Bracts broad, [illegible] Perianth lobes oblong. Capsules globose, loculicidal. Seeds black, rugose.

A common winter weed of cultivation in moist localities. Also found in moist, waste and unused ground

Local name : Piazi
Flowers and Fruits : Jan.-June
J. K. Maheshwari 1077

106. Smilacaceae

Smilax L. sp.

S. prolifera Roxb. Fl. Ind. 3 : 795, 1832; FBI 6 : 312, Brandis, Ind. Tr. 641; FLGP 3 : 261
S. laurifolia Roxb. Fl. Ind. 3 : 793, 1832

A stout, climbing prickly shrub with tendrils. Leaves variable, 10-15 × 7-10 cm., oblong-ovate to orbicular coriaceous, 3 to 7 nerved, petiole with an amplexicaul, auriculate sheath at the base. Flowers white, dioecious, in 10 or more, many-flowered, about 1.5 × 1.5 cm. umbels.

Grown as an ornamental along the outer walls of gardens or along poles etc. The flowers usually fall off without producing fruits.

Flowers : Jan.-March
J. K. Maheshwari 1078, Mughal Gardens

107. Pontederiaceae

Petioles swollen into floats, perianth tubular below, anther filaments not horned . . . *Eichhornia*
Petioles not enlarged to form floats, perianth segments free, filament of one larger anther horned on one side . . . *Monochoria*

Eichhornia Kunth nom. cons.

E. crassipes (Mart.) Solms in DC. Mon. Phan. 4 : 527, 1882, Merr. Enum. 1 : 200, Haines Bot. Bih. & Or. 1102.
Pontederia crassipes Mart. Nov. Gen. Sp. Pl. 1 : 9, t. 4, 1823

A floating aquatic, profusely rooting at the nodes. Leaves rosette-forming, spathulate or paddle-shaped, petioles swollen into green bladders. Flowers violet-blue, in many-flowered spikes. Ovaries 3-celled. Ovules numerous.

A beautiful plant introduced from America. Common during the monsoon period in Hindan River, Najafgarh Canal and other ponds.

English name : Bengal terror, Water-hyacinth
Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 546

Monochoria sp. (*vaginalis* Presl ?)

An amphibious herb, 30-100 cm high. Leaves ovate to ovate-lanceolate, 6-13 × 2.5-5 cm, usually acuminate. Flowers white, in rather dense racemes, peduncles emerging from the sheaths of upper leaves, pedicels in fruits up to 2.5 cm. long. Perianth lobes 6, pale green on the outside. Filaments of large anther with an acute process on one side. Fruits about 1 cm. long, oblong. Seeds ovoid, many ribbed.

A weed in the inundated rice fields, water marshes and muddy s[illegible] of the Najafgarh Drain, often in association with *Sagittaria guayanensis* H. B. & K., *Nymphaea nouchali* Burm. f., and *Sphenoclea zeylanica* Gaertn.

Local name : Puzi; Panighas
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 450; 1324

108. Commelinaceae

Perfect stamens 3; cymes enclosed in spathaceous bracts . . . . . *Commelina*
Perfect stamens 6 ; ocreate leaf sheaths flower-bearing *Cyanotis*

Commelina Linn.

All the cells of the ovary 1-ovuled, seeds smooth *C. kurzii*
The two anticous cells of the ovary 2-ovuled, the posticous 1-ovuled
Leaves usually ovate, broader; seeds rugose *C. benghalensis*
Leaves lanceolate, narrower, seeds smooth, truncate at one end:
Spathes broad ovate, ovary 5-ovuled but capsules usually 3-seeded, posticous cell not keeled . . . . . *C. forskalii*
Spathes ovate-lanceolate; capsules usually 5-seeded, posticous cell keeled . . . . . *C. hasskarlii*

C. kurzii Cl. in JLS. 11 : 444, 1871, Barnes in JBNHS 46 : 87, 1946

A straggling or erect, tall herb, 60-90 cm. tall. Leaves 10-15 × 2-3 cm. variable, lanceolate, scabrous or villous, sheaths 2.5 cm. long, the mouth bearded. Spathes sessile, 2-2.5 × 1.5-2 cm., nearly as broad as long, crowded in terminal heads, scabrous. Flowers violet-blue. Capsules 3-celled, cells 1-seeded. Seeds smooth, lead-coloured.

Found in moist, shady places of gardens and lawns. Also occurs in the hilly plateaus, spreading upon rocks and growing in the crevices of stones.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 298, Roshanara Gardens

C. benghalensis Linn. Sp. Pl. 41, 1753; FBI 6 : 370, FUGP. 3 : 274, Merr. Enum. 1 : 195.

A branched, diffuse or straggling herb with dimorphic flowers, creeping at the nodes below. Leaves ovate to oblong, broader above, reduced, ovate or cordate at the base. Aerial spathes [illegible] become [illegible] shaped or turbinate. Aerial flowers sky-blue [illegible] Capsules 5-seeded. Seeds wrinkled, pitted. Underground flowers [illegible] solitary in a pear shaped spathe.

A common rainy season annual on the Ridge as well as in fields, gardens and waste places, on moist shady situations, used in skin ailments and as fodder. The young leaves are eaten as vegetable.

Local name : Kanlert, Kanvo, Kankawwa, Kana
Flowers and Fruits : June-Nov.
J. K. Maheshwari 431, 521

C. forskalii Vahl, Enum. 2 : 172, 1806. FBI 6 : 371.

A diffuse, branched, creeping or straggling herb with aerial chasmogamous and underground cleistogamous flowers, rooting at the nodes. Leaves linear or narrowly oblong, often undulate. Aerial spathes axillary, 3 to 5-flowered, flowers sky-blue. Capsules usually 3-seeded. Seeds smooth, subglobose. Cleistogamous flowers usually solitary in a spathe, bisexual, reduced. **Capsules usually 1-seeded.**

Apparently a new record from the north Indian plains. Common on the Ridge in sandy depressions, amongst stones, in the shades of shrubs, etc. becoming abundant in local patches. Also found in fields, gardens and waste places. Common around Najafgarh village on damp, sandy soil and in hedges along 'bunds' of fields. Easily distinguished from *C. benghalensis* Linn., by its linear leaves and smooth seeds. Used as cattle fodder and as vegetable.

Local name : Kankawwa, Kana
Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 432; 1050

C. hasskarlii Cl. Comm. & Cyrt. Beng. 13, t. 5, 1874 & in DC. Mon. Phan. 3 : 157, FBI. 6 : 370; FUGP. 3 : 273.

The occurrence of this plant is included on the authority of Duthie in FLGP. loc. cit. who records it from Delhi to N. Oudh.

A glabrous or pubescent, much-branched herb. Leaves narrowly lanceolate. Spathes axillary, ovate-lanceolate, cordate at the base. Flowers in pubescent, unequal cymes, the lower branch 1 to 2-flowered, upper 2 to 4-flowered. Capsules quadrate, apiculate. Seeds cylindric.

Cyanotis D. Don nom. cons.

C. axillaris Schult. f. Syst. 7 : 1154, 1830. FBI 6 : 388; FUGP. 3 : 280.
Tradescantia axillaris Linn. Mant. 321, 1771.

A tre[illegible] ne[illegible] erect, diffus[illegible] branched [illegible] narrowly [illegible] or [illegible] lanceolate [illegible] sheaths inflated, flower-bearing [illegible] to axillary fascicles [illegible] inflated [illegible] beaked

Rare in the area Met only in [illegible] tracts, near Jamuna Br[illegible] [illegible] open place [illegible]

Flowers and Fruits : Oct.-Dec
J. K. Maheshwari 1000

109. Juncaceae

Juncus Linn

J. bufonius Linn Sp P 328 1753 Royle, Ill. 401, FBI 6 392 Merr [illegible] 201 FLGP 3 : 282.

A slender small, tufted annual up to 25 cm. high, [illegible] branched Leaves chiefly radical, grass-like Flowers pale green solitary and in scattered, few-flowered cymes, bracts [illegible] 6-androus and terminal 3-androus. Tepals with membranous margins. Capsules oblong, embraced by the perianth. Seeds numerous, very minute, finely reticulate

A winter herb. Common in muddy places or on moist, sandy or silty soil of Jamuna River Also found near temporary water ponds and similar situations in other areas of the Khadar tract

Local name : Pola
Flowers and Fruits : Jan.-March
J. K. Maheshwari 591

110. Palmae (Arecaceae)

Leaves flabelliform i.e. fan-shaped, leaflets connate to the middle . . . . . *Livistona*
Leaves feather-like, i.e. pinnate :
  Leaves bipinnate . . . . . *Caryota*
  Leaves simply pinnate :
    Lower leaflets spinescent . . . . . *Phoenix*
    Lower leaflets not spinescent
      Leaflets praemorse, i.e. coarsely eroded at the apex . . . . . *Arenga*
      Leaflets long-tapering, acute or acuminate *Rhapis*

Livistona R Br

[*L. chinensis* R Br Prodr 268, 1810 Drude in Engl & Prantl Nat

Pfam. 2 : 335, Blatt. Palms 104 t. 26, Bailey Man. Cult. P. 168.
Latania chinensis Jacq. Frag. Bot. 16 t. 11 : 1809.

A stout, fan-palm. Trunk bearing the bases of petioles and fibrous tissue. Leaves reniform, flabellate, 1.2-1.8 m. in diam., much-plicated, cut to about the middle, segments linear-lanceolate, hanging sharply downwards with age. Spadix paniculate, surrounded at the base by spathes. Flowers small, white. Fruits olive-shaped, oblong-ellipsoid, black.

Grown commonly in gardens and in front of bungalows as a tub fan-palm for decoration.

Fruits : Dec.
J. K. Maheshwari 577, Nicholson Gardens.

Caryota Linn.

C. urens Linn. Sp. Pl. 1189, 1753, FBI. 6 : 422, Brandis, Ind. Tr. 654; Bl. Palms 339, t. 57, f. 48, Santapau in RBSI 16(1) : 327, 1953.

A tall, feather-leaved palm. Trunk greyish-black, with regular transverse bands. Leaves bipinnate, the primary divisions arched and drooping. Leaflets fasciculate or alternate, cuneiform, obliquely truncate, fish-tail-like. Spadix very large, 2.5-3.5 m. long. Peduncle curved, covered over with large, coriaceous spathes, branches very long, pendulous, resembling a huge horse-tail. Male buds narrowly cylindric. Fruits dark purple, pericarp thin.

Planted in gardens and shrubberies.

Flowers : Major part of the year. Fruits : July.
J. K. Maheshwari 643, Rashtrapati Bhavan Compound, 1180.

Phoenix Linn.

Foot of stem often surrounded by root suckers, leaflets making a very acute angle with the common petiole . . . *P. dactylifera*
No root suckers :
Pinnae usually more than 2-ranked; leaves stiff or rigid . . . . . *P. sylvestris*
Pinnae 2-ranked; leaves flaccid or soft . . . *P. rupicola*

P. dactylifera Linn. Sp. Pl. 1188, 1753, Brandis, For. Fl. 552; Blatt. Palms 24, t. 8.

A tall tree. Trunk covered with the persistent bases of petioles, the foot often surrounded by a dense mass of root suckers. Leaves longer than those of *P. sylvestris* Roxb. Pinnae distichous, petioles laterally compressed. Male panicles compact on a short peduncle; flowers sweet-scented. Fruits oblong, reddish or yellowish-brown when ripe, with edible flesh. Seeds cylindric.

Cultivated in gardens for its edible fruits

Local name : Khajur

Flowers : March-April. [illegible]

J. K. Maheshwari, cult. [illegible]

P. sylvestris (Linn.) Roxb. Hort. Beng. 73, 1814; [illegible] & I. [illegible] 787, 1832; Brandis, For. Fl. [illegible] & Ind. Tr. 645; [illegible] 3 : 286; Blatt. Palms [illegible] Santapau in RBSI 16(1) : 127, 194.

Elate sylvestris Linn. Sp. Pl. 1189, 1753; [illegible]

A tall or stunted palm with a large thick crown. Trunk [illegible] the persistent bases of petioles. Leaves minute, greyish green; petioles compressed towards the apex and bearing a few short spines at the base. Leaflets fasciculed, rigid, ensiform, canaliculate, spinous-pointed. Inflorescence and flowers as in *P. dactylifera* Linn. Drupes oblong, [illegible] orange-yellow to reddish brown, edible. Seeds pale brown.

Wild along the railway routes from Delhi, in waste land near Gurukul, Faridabad and in moist shady or dry situations, forming dense grasses at some places. The leaves are commonly attacked by *Graphiola phoenicis* Poit.

Local name : Khajoor

P. rupicola J. Anders. in JLS 11 : 13, 1871; Haines, Bot. Bih. & Or. 883; Blatt. Palms 14, t. 5; Bailey, Man. Cult. Pl. 171.

A slender, graceful palm, 4.5-6 m. high. Leaflets bifarious, not auricled, flaccid, bright green, decurved; petiole compressed.

Planted as an ornamental palm in gardens, for its handsome appearance.

Arenga Labill. nom. cons.

A. saccharifera Labill. in Mém. Inst. Par. 4 : 209, t. 6, 7, 1803; FBI 6 : 421; Brandis, Ind. Tr. 648; Blatt. Palms 353, t. 60.

Gomutus saccharifer Spreng. Syst. 2 : 624, 1825.

A beautiful stout palm. Crown oblong, dense. Leaves large, oblong-ovate in outline. Leaflets linear, 4 to 5-fariously fasciculed, coriaceous, white beneath; base 1 to 2-auricled.

One of the most beautiful and useful palms. Cultivated in Delhi. It flowers about the tenth year.

English name : Sago palm

J. K. Maheshwari, passim in gardens.

Roystonea O. F. Cook

R. regia (H. B. & K.) O. F. Cook, in Bull. Torrey Bot. Cl. 531, 190[illegible]; Bailey, Man. Cult. Pl. 173.

Oreodoxa regia H. B. & K. Nov. Gen. & Sp. 1 : 305, 1815, Blat. Pl. no. 396, t. 73.

A tall, unarmed, annulate, graceful palm, 12 m. or more in height with a columnar, single bole. Trunks smooth, covered all over with a whitish substance, generally more or less thickened at the middle. Leaves very large, terminal, pinnate; leaf sheath large, sigate. Leaflets firmly papyraceous, coriaceous, many nerved lengthwise, apex shortly bifid.

Commonly planted in public gardens and parks along the roads and adorns a magnificent avenue by its striking appearance. Such fine avenues are found in Edward Park (near Red Fort), Nicholson Gardens (near Kashmere Gate) and in the compound of Jantar Mantar at New Delhi.

Local name : Bottle palm
J. K. Maheshwari 1428

111. Pandanaceae

Pandanus Linn. f. nom. cons. prop.

P. fascicularis Lamk. Encycl. 1 : 372, 1785 ; FBI 6 : 485, FUGP 3 : 291.

P. odoratissimus Roxb. Fl. Ind. 3 : 738, 1832.

P. tectorius Soland. ex Baef. f. in JLS 17 : 63, 56, 1878 ; Haines, Bot. Bih. & Or. 877.

A much-branched, thick bush or small tree, 3-3.6 m. high. Leaves borne closely spirally, erect, acuminate; margins and keels usually spinous-toothed. Spathes white. Male inflorescences very sweet-scented, flowers pedicellate, stamens many.

Planted in lawns and near temples for its very fragrant flowers.

Local name : Keora
Flowers : April-May
J. K. Maheshwari 711

112. Typhaceae

Typha Linn.

T. angustata Bory & Chaub. Exp. Sc. Mor. 3(2) : 33, 1832; FBI. 6 : 489, Cracon in Pfreich. 2 : 14 f. 4 F. Santapau in RBSI 16(1): 328, 1953.

T. elephantina Gr. 227, 1839 (non Roxb.).

A perennial, tall, marshy shrub, 1.5-3 m. high. Leaves usually exceeding the flowering stems, semi-cylindric above the sheath. Spikes cylindric, the males and females separated by a long interval. Female

spikes pale brown. Male flowers [illegible]
Pollen simple
[illegible] the marshes and [illegible]
Shahdara, Okhla and Najafgarh [illegible]

Local name Patera
Flowers Oct.-May
J. K. Maheshwari 547

113. Araceae

Leaves undivided, peltate, spathes pale brownish-yellow
Leaves divided
Tubers subglobose, smaller; leaves hastately [illegible] spathes [illegible] *Colocasia* [illegible]
Tubers depressed-globose, 20-30 cm across [illegible] *Typhonium*
leaflets oblong-obovate *Amorphophallus*

Colocasia Schott

C. esculenta (Linn.) Schott in Schott & Endl. Melet. [illegible] Enum. 1 186 Santapau in RHSI 16(1), 332, 1953.
Arum esculentum Linn. Sp. Pl. 965, 1753.
A. colocasia Linn. loc. cit.
Colocasia antiquorum Schott, loc. cit., FBI 6 523 Fl. GP 3 302

An erect, rhizomatous herb. Leaves peltate large; petioles stout. Flowers and leaves together often seen in vegetative state only. Spathes petaloid, pale brownish-yellow, caudate-acuminate, erect. Spadix shorter than spathe, cream-coloured. The fruits were not observed in be [illegible].

Cultivated. The plant is valued for its edible, starchy tubers or rhizomes. The leaves also are used as vegetables. The sap gives a permanent black stain to the clothes. The flowers were observed only on one occasion in a Government Farm 'Hatha' near Hindan River on September 11, 1955.

Local name : Arvi; Ghoyan; Kachalu ; English name : Arum
Flowers : Sept.
J. K. Maheshwari 1258

Typhonium Schott

T. trilobatum (Linn.) Schott in Wien. Zeitschr. 3 72, 1829, FBI 6 509, Blatt. in JBNHS. 35: 22, 1931.
Arum trilobatum Linn. Sp. Pl. 965, 1753.
An erect, stemless, tuberous herb. Leaves radical, hastately 3-lobed

or tripartite long-petioled, reticulate-veined, entire, petiole bases sheathing. Peduncle long, thick, curved. Spathes ovate, narrowed into a long point, purplish. Flowers bisexual.

Grows as a herbaceous undergrowth in a fruit orchard 'Bagh Peepar-wala' Seeds in Kasur Subzimandi. From the local gardeners it was gathered that a few specimens were planted some years ago and now it has spread rather vigorously in this garden. It is believed to contain a very bitter principle.

Flowers and Fruits : June-Aug.
J. K. Maheshwari 1121, on July 10, 1955

Amorphophallus Bl. ex Decne. nom. cons.

A. campanulatus (Roxb.) Bl. ex Decne. in Nouv. Ann. Mus. Par. 3: 366, 1834 (exc. syn. praeter Roxb.); FBI. 6: 513, FLGP. 3: 304, Blatt. in JBNHS. 35: 26, 1931.

Arum campanulatum Roxb. Hort. Beng. 65, 1814, nom. nud. & Pl. Cor. 3: 68, t. 272, 1820.

A perennial, stemless herb. Tubers depressed globose, dark brown. Leaves one or two, radical, large, twice bifid, on long, tapering petioles. Leaflets oblong or obovate, acute, spreading.

Cultivated in small quantities in some gardens. The tuberous roots are boiled and eaten as vegetable.

Local name : Zamikand
J. K. Maheshwari 1434

114. Lemnaceae

For a detailed account on the floral morphology of Indian Lemnaceae, *see* Charles McCann in JBNHS. 43: 148-163, Pl. 1-9, 1942.

Fronds with roots :
- Fronds with several roots . . . . . *Spirodela*
- Fronds with one root . . . . . *Lemna*

Fronds minute, rootless . . . . . *Wolffia*

Spirodela Schleid.

S. polyrhiza (Linn.) Schleid. in Linnaea 13: 392, tt. 5, 6, 1839; FUGP. 3: 365, McC. op. cit. 156.

Lemna polyrhiza Linn. Sp. Pl. 970, 1753; FBI. 6: 557.

Fronds herbaceous, broad obovate or orbicular, floating, opaque, thick, flat above, slightly convex below, dark green above, usually purplish beneath, each frond with multiple roots.

Common in the water of ponds, puddles and canals, often growing alone and forming a felt on the water surface.

Local name : Chowpatti
J. K. Maheshwari 1453

Lemna Linn.

L. paucicostata Hegelmaier Lemnac 138, t. 8, 1868, FBI [illegible] 3 : 305, McC. op. cit. 153

Fronds oblong, obovate-oblong or obovoid, rat[illegible] flat on both surface, asymmetrical, cut [illegible] Root cap [illegible] sheath appendaged. Male flowers reduced to [illegible] echinate.

Common in canals, ponds, puddles and stagnant wa[illegible] waste places, grows a[illegible] or associated with *Azolla pinnata* R. Br. and *Wolffia* sp. Under favourable conditions the flowers are [illegible] produced in the area. The frond dies after seeding.

Local name : Chowpatti
J. K. Maheshwari 1455

Wolffia Horke.

Wolffia sp. (*microscopica* Kurz ?)

A very minute, granular, floating plant. Fronds opaque, subglobose, ovate, ovate-oblong or elliptic, slightly convex above, rootless. Young fronds sessile, arising from a pocket at the base of the old frond. Flowers arising from a central cup-like hollow in the centre of the frond. Male flowers solitary, i.e. of one stamen, anthers globose, 1-celled. Female flowers solitary, ovary globose or ovoid.

The smallest flowering plant in the world. Common throughout the pools, puddles and stagnant water ponds and canals, either growing alone and forming a green felt or associated with *Lemna* and *Azolla*. The male flowers are visible to the naked eye as a minute, white raised dot on the frond.

Flowers : After rainy season
J. K. Maheshwari 1454

115. Alismataceae

Sagittaria Linn.

S. guayanensis H. B. & K. Nov. Gen. & Sp. 1 : 250, 1815, FBI 6 : 561, FUGP, 3 : 310.

A floating, fibrous-rooted, aquatic or semi-aquatic herb. Leaves broad ovate, deep cordate, obtuse or rounded, obscurely nerved, membranous. Flowers whitish, in few, close whorls, on short stout peduncles. Achenes numerous, flat, wing prominently toothed.

Common after the rains in Najafgarh Drain as a floating aquatic in shallow water or semi-aquatic on a muddy marshy ground associated with species of *Marsilea*, *Sphenoclea* and *Ludwigia*. Also met as a weed in flooded rice fields.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 438

116. Aponogetonaceae

Aponogeton Linn. f.

A. natans (Linn.) Engl. & Krause in Pflanzenfam. 24 : 11, 1906.
Saururus natans Linn. Mant. 227, 1771.
Aponogeton monostachyus Linn. f. Suppl. 214, 1781 ('*monostachyon*').
FBI. 6 : 564; FUGP. 3 : 313.

A floating scapigerous aquatic herb. Leaves oblong to linear-oblong, 7-15 × 1-8-3 cm., acute or rounded, petiole slender, much longer than the blade. Flowers bright pink or bluish-purple in solitary, densely flowered spikes. Stamens 6, anthers coloured. Seeds ribbed.

The plant is known to occur in the plains but was not collected by Dobie (FUGP. loc. cit.). Occurs in quiet water collected in ponds near Shahdara, where it flowers and fruits after rains.

Flowers and Fruits : Aug.-Nov.
P. P. Khanna 1108, Shahdara

117. Potamogetonaceae

Potamogeton Linn.

Upper or all leaves floating, elliptic or elliptic-lanceolate . . . *P. indicus*
Leaves all submerged
  Leaves linear-oblong, crisped, translucent . . . *P. crispus*
  Leaves filiform . . . . . *P. pectinatus*

P. indicus Roxb. Fl. Ind. 1 : 452, 1832; FBI. 6 : 565; Aschers. & Graebn. in Pflanzenfam. 3 : 64; Santapau in RBSI. 16(1) : 333, 1953.

A floating or marshy, aquatic herb, brownish, pale purple throughout. Stems creeping below. Submerged leaves lanceolate, very thin, floating ones elliptic, elliptic-lanceolate or oblong, thicker. Stipules scarious. Spikes generally above the surface of water, erect, dense-flowered, reddish-brown in colour. Fruits 3-ribbed on the back.

Common in Hindan River and temporary water ponds and marshes near Shahdara.

Flowers : Cold season. Fruits : Summer season.
J. K. Maheshwari 566

P. crispus Linn. Sp. Pl. 126, 1753; FBI 6 [illegible]

A slender, submerged, aquatic herb [illegible] or linear-oblong, crisped, finely serrulate [illegible] up to 1.5 cm. long, generally for a few [illegible]

Common in shallow, temporary water [illegible]

Flowers and Fruits : Cold and summer seasons
J. K. Maheshwari 570; 753; LKU Shabnam

P. pectinatus Linn. Sp. Pl. 127, 1753; FBI 6 [illegible]

A [illegible] grass-like much branched [illegible] stipules long-sheathing. Spikes aerial or [illegible] few-flowered, in distant whorls. Fruits oblique hardly keeled.

Common in similar situations as *P. crispus* Linn.

Flowers and Fruits : Cold and summer seasons
J. K. Maheshwari 553, 1279

118. Zannichelliaceae

Zannichellia Linn.

Z. palustris Linn. Sp. Pl. 969, 1753; FBI 6 568; FLGP 3 [illegible]

A slender submerged aquatic herb. Leaves filiform, pseudoverticillate. Flowers minute, unisexual. Male flowers subtended by a spathe, monandrous. Female flowers with a hyaline tubular perianth. Carpels with an obliquely peltate, large stigma. Fruits stipitate horned.

Common in quiet or slowly moving water of Jamuna and Hindan Canals and ponds. In general appearance it resembles vegetative plants of *Potamogeton pectinatus* Linn. which, however, bears flowers in short spikes.

Flowers and Fruits : Oct.-Feb.
J. K. Maheshwari 589

119. Cyperaceae

Nut enclosed in an utricle; florets unisexual — *Carex*
Nut not enclosed in an utricle :
  Flowering glumes distichous . . . . . *Cyperus*
  Flowering glumes spirally arranged or sometimes the lowest subdistichous :
    Style base dilated and constricted or articulated above the nut
      Hypogynous bristles present, leaves absent — *Eleocharis*
      Hypogynous bristles absent, leaves usually present
        Style base often persistent, if falling not leaving a tubercle on the nut — *Fimbristylis*

Style deciduous, leaving a tumor on the nut . . . . *Bulbostylis*

Style base not dilated, continuous with the nut
Nut with or without hypogynous bristles style base not swollen *Scirpus*

Nut with 6. hypogynous scales, divided to the base into linear segments, stigmas 3 *Eriophorum*

Carex Linn

C. fedia Nees in Wt. Contrib. 129, 1834
C. wallichiana Presc ex Nees, loc cit (non Spreng.).

An erect, glabrous herb with a stout rhizome bearing fibrous roots. 60 cm or more in tallness. Stems triquetrous, leafy Leaves longer than the inflorescence, coriaceous, scabrid Panicles 25-40 cm long, lax, spikes 5-8 × 1 cm dioecious, long-tailed by the upper male portion. Female spikes ovary naked, stigmas 3, prominently exserted Utricle hairy longitudinally nerved. Nuts trigonous, brown

Common along the irrigation channels running across the fruit orchards near Azadpur and Karnal Road and those located along the railway lines from Delhi to Azadpur. Used as cattle fodder

Local name : Motha
Flowers and Fruits : Feb.-April
J. K. Maheshwari 929

Cyperus Linn. sensu lato

Stigmas 2, nut compressed or flattened:
Nut flattened, rachilla of spikelet persistent:
Nut compressed radially to the rachilla . . . . *C. pumilus*
Nut compressed tangentially to the rachilla:
Spikelets in a large, terminal, compound umbel . . . . *C. alopecuroides*
Spikelets in a small, apparently lateral head . . . . *C. laevigatus*
Nut laterally compressed, rachilla of spikelet deciduous :
Glumes many, heads large, dense, spikelets greenish . . . . *C. pygmaeus*
Glumes 4-5 only; heads smaller; spikes capitate, white :
Spikes 3, aggregated into a compact head . . . . *C. triceps*
Heads solitary :
Nut bearing glume with a crest on the keel . . . . *C. kyllingia*
Nut bearing glume not crested . . . . *C. brevifolius*

Stigmas 3 : nut triquetrous
Plants cultivated a stout palm like plant with [illegible] leaves
Plants wild habit not palm like
Inflorescence a solitary head of 3-9 spikes [illegible]
Inflorescence umbellate, rarely a single head spikes [illegible]
Spikelets clustered in globose nearly globose heads [illegible] tracted umbels:
Spikelets in globose or nearly globose heads, [illegible] woolly :
Floral glumes mucronate
Floral glumes obtuse . . . . C. *umbellatus*
Spikelets in contracted umbels; rootlets woolly . C. *difformis*
Spikelets shortly or very shortly spicate or subspicate C. [illegible]
Rachilla of spikelets distinctly or conspicuously winged
Leaves short or obsolete .
Stems terete, transverse septa distinct when dry
Leaves absent. Bracts under 2.5 cm long, scale-like . C. *articulatus*
Stems trigonous above, non-septate or hardly visible when dry Leaves usually reduced, sometimes developed. Bracts large, up to half the length of the umbel . . . . . C. *corymbosus*
Leaves long, rarely less than half as long as, often longer than, the stem :
Stolons bulbiferous ; inflorescence of a head of umbels . . . C. *bulbosus*
Stolons not bulbiferous; umbels expanded, spikelets 3-8, in short spikes C. *rotundus*
Rachilla of spikelets not or hardly winged
Glumes cuspidate or aristate, yellowish when mature . . . C. *compressus*
Glumes obtuse or minutely mucronate, not cuspidate nor aristate :
Glumes plicate, broadly boat-shaped, gibbous towards the rachilla when folded, spikelets yellow C. *[illegible]*
Glumes oblong or oblong-elliptic, not gibbous spikelets pale, reddish-or chestnut-brown
Spikelets crowded in an elongate spike, margins of glumes hyaline C. *elevatus*
Spikelets not crowded in cylindric spikes, in fruit contracted into tassels, margins of glumes not or very inconspicuously hyaline . . C. *nutans*

C. pumilus Linn. Cent. Pl. 2: 6, 1756 & Amoen. Acad. 4: 302, Kuekenth. in Pflanzenreich 101: 375, f. 44 A-E.

Pycreus nitens Nees in Nov. Act. Nat. Cur. XIX, Suppl. I: 53, 1843, Cl. in FBI 6: 591.

P. pumilus Dom. in Bibl. Bot. 85: 417, 1916.

A small, glabrous, fibrous rooted, tufted plant, up to 20 cm. high. Leaves narrowly linear, acuminate, midrib prominent. Inflorescence an umbel of spikes on slender rays, primary bracts foliar, much exceed the inflorescence. Spikelets 10-30 in a spike, linear, compressed, many-flowered, 2 ranked. Glumes ovate, keel excurrent into a curved mucro. The wings nerveless. Nuts ellipsoid or obovoid, compressed.

Occurs along the banks or in the drying beds of Najafgarh Canal on soft, sticky soil.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 441

C. alopecuroides Rottb. Descr. & Icon. 38, t. 8, f. 2, 1773, Kuekenth. op. cit. 71.

Juncellus alopecuroides Cl. in FBI 6: 595, 1893, FUGP 3: 340, Blatt. & McC. in JBNHS 37: 33, 1934.

An erect, stout, glabrous, marshy sedge up to 1.5 m. high. Leaves linear, acuminate. Spikelets pale brown, numerous, in compact, broad spikes arranged in a compound inflorescence, primary and secondary rays umbellate. Glumes boat-shaped, keeled, acute or apiculate. Nuts broadly obovate, dull white or pale brown.

Occurs along the banks of canals and ponds.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 477, Najafgarh; 888; 974, Roshanara Gardens.

C. laevigatus Linn. Mant. 179, 1771, Kuekenth. op. cit. 321.

Juncellus laevigatus Cl. in FBI 6: 596, 1893, FUGP 3: 341, Blatt. & McC. op. cit. 34.

An erect, glabrous tufted plant, up to 40 cm. high. Stems nearly terete, polished, bright green or straw-coloured, covered at the base with closed leaf sheaths. Leaf blades often undeveloped. Spikelets up to 15 in a compact, one-sided head, sometimes solitary, pale straw-coloured. Glumes broad ovate, acute. Nuts broad ellipsoid, brown, smooth.

A plant of temporary moist localities, marshes, sandy beds of river and muddy soil.

Flowers and Fruits : July-Sept.
J. K. Maheshwari 312, near Okhla.

C. pygmaeus Rottb. Descr. & Icon. 20, t. 14, ff. 4, 5, 1773.

Juncellus pygmaeus Cl. in FBI. 6: 596, 1893, FUGP. 3: 341.

Cyperus michelianus Link [illegible] Figueiras [illegible] & G[illegible] Syn. 2(2) : 273, 1903.

A very tufted, prostrate or ere[illegible] herb with [illegible] leaves narrowly linear, acuminate. Spikelets [illegible] solitary, terminal head. Glumes [illegible] acute or acuminate. Nuts ellipsoid, tipped by [illegible] convex.

Common in the sandy or silty beds of Jamuna River and [illegible] during the winter season. Also found in marshy [illegible] forming a dense tuft of plants on damp soil.

Flowers and Fruits : Oct.-July
J. K. Maheshwari 146

C. triceps (Rottb.) Endl. Cat. Hort. Vindob. 1 : 94, 1842. Kuekenth. in Pflanzenreich 101 : 578.

Kyllinga triceps Rottb. Descr. & Icon. 14 : t. 4, f. 6 (excl. syn. Rheede) 1773; FBI 6 : 587, FUGP 3 : 343.

K. monocephala Nees in Wl. Contrib. 91 : 1834 (non Roxb.).

A small, glabrous, tufted plant, 8-20 cm. high. Leaves linear, one half or nearly as long as stems. Spikes ovoid or cylindric-ovoid, white, usually 3 (sometimes 5), aggregated into a compact head. Spikelets 1-flowered. Third glume ovate, with smooth, green keel. Nut oblong or ellipsoid-oblong, laterally compressed.

Common on the Ridge during the monsoon period on gravelly soil or amongst stones and in the crevices, often associated with *Oropetium thomaeum* Trin. Also found in the plains near canals and similar moist localities.

Flowers and Fruits : Aug.-Nov.
J. K. Maheshwari 1457

C. kyllingia Endl. Cat. Hort. Vindob. 1 : 94, 1842, Kuekenth. op. cit. 606 : f. 64 C-D.

Kyllingia monocephala Rottb. Descr. & Icon. 13, t. 4, f. 4, 1773 (excl. syn. nonnullus), FBI 6 : 588, FUGP 3 : 344.

Cyperus monocephalus F. Muell. Fragm. 8 : 271, 1874 (non Roxb. 1814 & 1832, quae est *C. cephalotes* Vahl).

An erect, glabrous plant, up to 30 cm. tall, with creeping rhizomes. Leaves linear, acuminate, as long as the stem. Spikes subglobose, white, solitary. Spikelets obliquely lanceolate-elliptic, one-flowered. Third glume boat-shaped, acuminate, 3-nerved on each side of the prominently winged, serrulated keel. Nuts obovate, much compressed.

Common and abundant in fruit orchards during rainy season as an herbaceous undergrowth on moist soil, near canals, ponds and other places.

Local name : Bhada, Motha
Flowers and Fruits : June-Sept
J. K. Maheshwari 108, 406

C. brevifolius (Rottb.) Hassk. Cat. Hort. Bogor. 24, 1844, Kuekenth. op. cit. 800.

Kyllinga brevifolia Rottb. Descr. & Icon. 13 : t. 4, f. 3, 1773, FBI. 6 : 588; FUGP. 3 : 343.

An erect, glabrous plant with slender, horizontal rhizomes, 15-30 cm. tall. Leaves linear, erect, shorter or as long as the stem. Spikes ovoid, solitary, white. Spikelets ovate-lanceolate to lanceolate, one-flowered. Glumes 2-nerved on either side of the serrated, non-winged keel. Nuts obovate ellipsoid, much laterally compressed.

Common in similar localities as *C. kyllingia* Endl.

C. flabelliformis Rottb. Descr. & Icon. 42 : t. 12, f. 2, 1773.

C. alternifolius Linn. subsp. *flabelliformis* Kuekenth. in Pfreich. 10, 193, 1936.

An erect, stout, palm-like plant 60-120 cm. high. Involucral leaves 15-25, prominently nerved, much exceeding the umbel. Umbels lax, numerous, crowded at the top of primary rays. Spikelets compressed, lustrous. Glumes carinate, apiculate, closely imbricate.

Native of Africa. Grown as an ornamental sedge in ferneries, plant houses and near small pools of water in gardens.

Local name : Nagarmotha
Flowers and Fruits : Nov.-May
J. K. Maheshwari 584, Nicholson Gardens

C. niveus Retz. Obs. 5 : 12, 1788, FBI. 6 : 601, FUGP. 3 : 327, Blatt & McC. in JBNHS. 37 : 261, 1934.

An erect, glabrous, tufted herb with a short, woody rhizome and slender, fibrous roots. Leaves nearing or exceeding the inflorescence, narrowly linear. Inflorescence a solitary head of 3-8 spikelets. Spikelets white, much compressed, linear. Glumes distichous, ovate-lanceolate, close-nerved. Nuts dark brown, triquetrous, lower part of style persistent.

Uncommon on the Ridge as well as the neighbouring hilly tracts near Faridabad on sandy or gravelly soils.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 719; 1187, Ridge

C. uncinatus Poir. in Lamk. Encycl. 7 : 247, 1806, FUGP. 3 : 325; Blatt & McC. op. cit. 258.

C. cuspidatus H.-B. & K. Nov. Gen. & Sp. 1 : 204, 1815; FBI. 6 : 598.

An erect, glabrous, tufted sedge, 10-25 cm. high, with several floral

shoots. Leaves all basal, [illegible]
florescence umbellate [illegible]
nearly globose head [illegible]
awn about half as long as the [illegible] blade [illegible]
Occurs on moist or damp, sandy soil of [illegible]

Flowers and Fruits Aug.-Nov
J. K. Maheshwari 972, Hauz Khas

C. difformis Linn. Cent Pl. 2 : 6 1756, FBI 6 [illegible] Blatt & McC op cit 259, Kuekenth op [illegible]
An erect, tufted, annual herb with [illegible] usually shorter than the stem, smooth [illegible] heads of spikelets, nearly globose, some fixed [illegible] closely imbricate, brown at maturity Nuts trigonous [illegible] brown

Met in damp or moist sandy or sandy clayey soil [illegible] and fallow fields It is readily distinguished by the dense [illegible] of the umbel

Flowers and Fruits: After rains
J. K. Maheshwari 973, Hauz Khas

C. atkinsonii Cl. in JLS. 21 : 109, 1884, FBI 6 603, Blatt & McC op cit 262, Kuekenth op. cit. 271.
An erect, glabrous plant with a woody rhizome Stems thickened at base. Umbels simple, contracted Spikelets linear much compressed, many-flowered, whitish or pale brown Glumes closely imbricate
A new record from the Upper Gangetic Plain Occurs in moist or wet soils near canals, ponds and puddles.

Flowers and Fruits : Aug.-Oct

C. articulatus Linn. Sp Pl 44, 1753, FBI 6 : 611, Kuekenth op cit 77
A glabrous, usually leafless sedge Stems terete stout, 90-180 cm high, when dry usually with distinct, transverse septa Umbels compound, primary rays often 10, up to 15 cm. long, bracts usually 1 × 0.5 cm ovate scale-like Secondary rays in corymbs of 8-15 spikelets. Spikelets narrowly linear Nuts trigonous; style branches linear, 3, exserted
A new record from the Upper Gangetic Plain A water-loving sedge, usually found in standing water of ponds and canals

Flowers and Fruits : April-Oct.
J K Maheshwari 1157, Hindan River

C. corymbosus Rottb Descr & Icon 42 t 7, f 4, 1773, FBI 6 612, FCGP 3 336, Blatt & McC op cit 270, Kuekenth op cit 80 f 10
A tall, glabrous, rush-like plant with creeping, woody rhizomes Leaves reduced to sheaths but sometimes with a linear acute blade

Umbels compound, primary rays slender, secondary rays terminated by spikes or corymbs of 4-16 spikelets. Glumes straw coloured, pale reddish brown or red-brown. Nuts narrowly obovoid.

Common in marshy places and near canals.

Flowers and Fruits : July-Dec.

C. bulbosus Vahl Enum. 2 : 342. 1806; FBI 6 : 611; FUGP 3 : 336.

An erect, perennial, tufted herb. Bulbs clothed with scale leaves. Leaves borne in lower part of the stem, from 1-2-7 cm. above the bulb, blades narrowly linear. Inflorescence with tufts of sessile spikelets in a spike and forming a contracted umbel. Spikelets chestnut-brown. Glumes many-nerved.

Common in waste and unused, dry gravelly places and in crevices amongst stones on the Ridge.

Local name : Motha
Flowers and Fruits : July-Dec.
J. K. Maheshwari 971, Karnal Road.

C. rotundus Linn. Sp. Pl. 45. 1753; FBI 6. 614; FUGP 3 : 332; Kuckenth. op. cit. 107, f. 13.

An erect, glabrous herb, up to 60 cm. high. Leaves usually shorter than the stem, linear. Inflorescence an umbel of more or less condensed spikes, bracts foliar, generally three, exceeding the umbel. Spikelets pale yellow or brown, often with a reddish tinge. Glumes decurrent below as hyaline wings. Nuts obovoid-ellipsoid.

A common and variable weed during the rainy season in lawns, unused ground and fields, growing in different types of habitats, often becoming abundant and dominating the vegetation.

Local name : Motha
Flowers and Fruits : July-Oct.
J. K. Maheshwari 779; 1052.

C. compressus Linn. Sp. Pl. 46. 1753; FBI 6 : 605; FUGP 3 : 328; Blatt & McC. in JBNHS. 37 : 262. 1934; Kuckenth. op. cit. 156.

An erect herb with numerous, fine, tufted roots, the whole plant greenish or greyish-green. Leaf blades narrowly linear, tapering to a fine acuminate tip. Inflorescence umbellate; some of the rays sessile. Spikelets in condensed umbellate spikes, strongly compressed laterally. Glumes green on the sides, winged. Nuts broadly triquetrous, dark brown.

Common during the monsoon period on the Ridge, along streams, by roadsides, in waste places and along paths on moist, silty or sandy soil.

Local name : Mothi
Flowers and Fruits : July-Oct.
J. K. Maheshwari 256; 1115.

C [illegible] S, Pl 45, 1753 FBI [illegible]
op. cit 150.

An erect [illegible] the primary rays branched [illegible] bracts foliar Spikelets [illegible] shaped keeled [illegible] and [illegible] recognized by [illegible]

Local name : Motha
Flowers and Fruits : Aug.-Oct
J K Maheshwari 347

C. eleusinoides Kunth Enum. 2 [illegible] 1837 FBI 6 [illegible]
330

C. nutans Vahl var. *eleusinoides* Hackel Bot B b & [illegible]

An erect, glabrous, tall perennial [illegible] linear, acuminate; midrib keeled below, margins [illegible] compound, with very unequal primary rays, primary bracts [illegible] Spikelets spicate on ultimate branches, linear [illegible] elliptic, broadly keeled. Nuts ellipsoid, trigonous

Rare in marshes and along canal banks

Flowers and Fruits : July-Sept
J K. Maheshwari 1429

C. nutans Vahl, Enum 2 363, 1806 FBI 6 607, Bead & Mel [illegible] c t 266

An erect, stout sedge, 60-120 cm. high. Spikelets grey brown [illegible] large, decompound umbel sparsely spiked on the ultimate branches, suberect, forming more or less a thyrse and appearing at maturity like a tassel. Glumes linear or oblong apiculate, scarious margined Nuts triquetrous

A new record from Delhi State Occurs rarely near ponds and canal banks.

Flowers and Fruits : July-Sept
J. K. Maheshwari 1048, Roshanara Gardens

Eleocharis R. Br

Some books on Indian flora describe this genus under *Heleocharis*

For a correct spelling, *see* Sprague in Kew Bull p 352 1938

Rhizome absent, a small, tufted sedge, up to 10 cm high spikelets [illegible] *E. [illegible]*
cm. long . . . . . .

Rhizome creeping, a taller sedge up to 45 cm. high; spikelets 1-2 5 cm *E. [illegible]*
long

F. atropunctata (R. [illegible]

A small, tufted, [illegible] Spikelets solitary, terminal [illegible] brown, [illegible] Bristles white. Nuts [illegible]

Met in the fields of Timarpur after harvest [illegible] associated with *Scirpus roxbi* Parker

Flowers and Fruits : Sept.-Oct.

J. K. Maheshwari 1272

F. palustris R. Br. Prodr. 224. 1810 in obs.; FBI 6 : 628, FUGP 3 : 348 (Hook. f. & McCann), [illegible] 538

An erect, [illegible] ed sedge with a creeping rhizome [illegible] 45 cm high. Stems terete or [illegible] striate. Leaves absent, sheaths [illegible] Spikelets solitary, terminal, 1-2.5 cm long, ellipsoid or cylindric, yellow or brown, broader than the stem. Glumes closely imbricate, [illegible] or aristaceolate [illegible]. Bristles brown, retrorsely scabrous. Nuts broad-obovoid, biconvex, tipped by the broad style base.

Common in the marshy places near Shahdara and Hindan River. Also met near the temporary water collected in ponds and puddles in the hilly tracts near Gurukul, Faridabad.

Flowers and Fruits : Dec.-April

J. K. Maheshwari 630 ; 817

Fimbristylis Vahl nom. cons.

Spikelets solitary, nuts trigonous . . . . . *F. monostachya*

Spikelets more than one :

Stigmas 2, nuts biconvex :

Glumes hoary-hairy in the upper half . . . . . *F. ferruginea*

Glumes glabrous :

Leaves often as long as the stem, not coriaceous; nuts ribbed and trabeculate . . . . . *F. dichotoma*

Leaves always short, coriaceous; nuts not ribbed or trabeculate . . . . . *F. spathacea*

Stigmas 3, nuts trigonous

Spikelets or some of them in clusters of 2-5 . . . . . *F. junciformis*

Spikelets discrete :

All glumes spirally imbricate, spikelets small . . . . . *F. quinquangularis*

Lower glumes distichous, spikelets longer . . . . . *F. tenera* var. *oxylepis*

[illegible]

F. ferruginea (Linn.) Vahl, Enum 2 [illegible] 1806. FBI [illegible]

[illegible] Sp. Pl. 50. 1753

[illegible] Leaves shorter than half as long as the [illegible] Spikelets in simple or sometimes compound umbels, usually 5-15, ellipsoid. Glumes broad ovate, concave, brown in the upper half, brown. Nuts pale brown, biconvex, subobovate, minutely striate and apiculate.

Common along the banks of Ganga, rivers and ponds on sandy or wet soil and other moist situations near water taps and pipes. A good distinguishing character of this sedge is the hairiness in the upper half of the glumes.

Flowers and Fruits : June-Oct.
J. K. Maheshwari 172, 287, 1120, 1242, 1259

F. dichotoma (Linn.) Vahl, Enum. 2 : 287. 1806. FBI 6 : 635. FLGP 3 : 351.

Scirpus dichotomus Linn. Sp. Pl. 50. 1753

A tufted, fibrous-rooted annual. Leaves as long as the stem or shorter, scabrous beneath. Umbels compound or decompound. Spikelets ovate, subcylindric, sessile and pedicelled. Glumes boat-shaped, keel excurrent as a mucro. Rachis after the fall of the glumes deeply pitted. Nuts pale brown, 5 to 9-ribbed, transversely rugose.

Common in moist, sandy or silty soil of Jamuna banks and ravines and similar situations in Khader area. It differs from the closely related *F. diphylla* Vahl. in the spikelets not terete and glumes keeled appreciably. The fresh roots emit a fragrant smell.

Flowers and Fruits : Feb.-June
J. K. Maheshwari 975

F. spathacea Roth, Nov. P. Sp. 94. 821. FBI 6 : 640. FLGP 3 : 352.

A perennial rhizome bearing a tufted plant. Stems terete, [illegible] Leaves many at the base, much shorter than stems, coriaceous. Spikelets brown, ovoid, in simple or compound umbels. Styles [illegible]

swollen at the base. Nuts minutely stipitate, biconvex, minutely [illegible]

Occurs during the rains on moist grassy plains near canals forming dense tufts over a large distance.

Local name : Landas
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1263, near Hindan River.

F. junciformis Kunth, Enum. 2 : 239, 1837; FBI 6 : 647; FLGP 3 : 357; Blatt. & McC. op. cit. 546.

An erect, small sedge 15-30 cm. high with a woody, horizontal rhizome. Stems angular, striate. Leaves crowded at the base, petiolate. Spikelets clustered or solitary in compound umbels. Bracts foliaceous. Glumes ovate, brown. Nuts trigonous, obovoid, straw-coloured.

The occurrence of this plant is based on the authority of Jameson (see Duthie in FLGP loc. cit.) who collected it from the village Bamnik near Delhi, district in October 1842. I have not seen the plant in the field.

F. quinquangularis Kunth, Enum. 2 : 229, 1837; FBI 6 : 644; FLGP 3 : 356; Blatt. & McC. op. cit. 547.

An erect, tufted annual with several fibrous roots. Leaves longer or shorter than the stems, scabrid along the margins. Spikelets very numerous, small, ellipsoid or narrowly ovoid, in decompound umbels, pedicels filiform. Glumes ovate, keel 3-nerved, slightly excurrent. Nuts globose-obovoid, pale brown, minutely tuberculate.

Common in the marshes of Najafgarh Canal, along canal banks and similar moist situations.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 977.

F. tenera Roem. & Schult. var. oxylepis Cl. in FBI 6 : 642, 1893.

An erect, tufted plant, 15-30 cm. high. Leaves about half the length of stems. Umbels lax, subcompound, consisting of a sessile spikelet, 2-3 pedicellate spikelets and 2-3 rays with one sessile and 1 or 2 pedicellate spikelets. Spikelets subcylindric or narrowly ovoid, 5-10 × 2 mm. Glumes ovate, brown, keel prominent, excurrent. Rachillar areoles large, depressed. Nuts obovoid, dirty white or yellowish-brown, verrucose.

Common near canals, ponds and in fields of rainy and winter season crops on drying soil.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 976, Najafgarh, 1262, Ridge, 1309, Vallabgarh fields.

Bulbostylis Kunth nom. cons.

B. barbata (Rottb.) Cl. in FBI 6 651 [illegible]
in Rheinwardt's 6 51 961 [illegible]

Scirpus barbatus Rottb. Descr. & Ic. [illegible]

A densely tufted herb with fibrous [illegible] [illegible] Leaf sheaths with [illegible] [illegible] small, dense, terminal head [illegible] [illegible] dull white very minutely stipitate [illegible] [illegible] on the nut

Common as a weed during the monsoon period [illegible] cultivated fields of rainy and winter season crops, on damp [illegible] or sandy soil. It is locally believed that an aggressive growth of [illegible] sedge considerably affects crop growth.

Local name : Musadadhi; Piaza
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 323, near Qutab

Scirpus Linn.

Spikelets sessile, usually many, in simple clusters or heads, short sedges
Clusters lateral on the stem:
Heads borne near the base, glumes acute, scarcely keeled — *S. articularus*
Heads situated about or above the middle of the stem, glumes mucronate, keeled — *S. roylei*
Clusters terminal — *S. affinis*
Spikelets many-stalked or umbelled, tall sedges -
Umbels lateral, the lowest bract erect, appearing as a continuation of the stems, spikelets smaller — *S. littoralis*
Umbels terminal, bracts foliar, spikelets larger — *S. tuberosus*

S. articulatus Linn. Sp. Pl. 47, 1753, FBI 6 656, FUGP 3 360

An amphibious, moisture-loving sedge with fibrous roots and erect, hollow, terete, light green culms (flat in dried specimens). Leaves appear in the juvenile stage under water and fall away before the inflorescence, leaving a membranous sheath. Spikelets pale brown in a solitary, dense, lateral head, situated often near the base. Bristles absent. Nuts obovoid, triquetrous, black, apiculate.

Common in paddy fields on moist or muddy soil, near canal banks, on drying flooded areas and in marshes, growing alone or with *S. roylei* Parker.

Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 978, Najafgarh

S. roylei (Nees) Parker in FUGP 3 : 361 1979

Isolepis roylei Nees in Wt. Cornub 107 1834

Scirpus quinquefarius Boeck. Hamp. ex Boeck. in Linnaea 36 701 1870, FBI 6 : 657

An erect, tufted sedge 20-45 cm high. Stems erect, slender, conspicuously transverse-septate. Leaf sheaths membranous. Spikelets usually several and above the middle of the stem, [illegible] yellowish. Glumes membranous, [illegible] keeled. Nuts [illegible] ovoid.

Common in drying paddy fields on muddy or wet soil and in marshes near canals and streams, often associated with *S. articulatus*. Leaf [illegible] white. Culms [illegible] slender stems and the [illegible] heads usually borne above the middle of the stems.

Flowers and Fruits : Sept.-Oct.

J. K. Maheshwari 970, Najafgarh

S. affinis Roth in Roem. & Schult. Syst. 2 : 140. 1817 & Nov. Pl. Sp. 30, 1821 ; Raymond in Nat. Canad. 86 : 227, 1959

S. strobilinus Roxb. Hort. Beng. 6. 1814 nom. nud. & Fl. Ind. 1 : 222. 1820.

S. maritimus var. *affinis* Clarke FBI 6 : 659, 1893, FUGP 3 : 363

An erect, spongy rooted sedge with smooth, horizontal rhizomes. Stems up to 5 cm tall, thickened at their base, sharply trigonous, leafy. Leaf blades 20 × 5 mm. Bracts 1-3, unequal. Spikelets 1-5, sessile, 2 × 1 mm., light brown. Nuts lenticular, dark brown, ovate, apiculate.

Common along the banks as well as in the bed of Jamuna River on wet or muddy soil and near temporary ponds in the Khadar tract.

Flowers and Fruits : Feb.-June

J. K. Maheshwari 175; 628; 843; 1007

S. littoralis Schrad. Fl. Germ. 1 : 142, t. 5, f. 7, 1806; FBI 6 : 659 FUGP 3 : 362

A hygrophilous, tall sedge with creeping rhizomes. Stems 1 m or more in tallness, terete, hollow. Leaves develop under the surface of water and fail before the appearance of aerial inflorescence. Spikelets reddish-brown, in lax, subcorymbose or paniculate umbels, borne laterally near the apex. Glumes notched at the tip, mucronate by the excurrent keel. Bristles soft, linear. Nuts broad obovoid, biconvex, dull brown.

Common in or along the Najafgarh Canal and in the temporary ponds near Shahdara. The plants appear as if they grow in rows due to the long, creeping rhizomes.

Flowers and Fruits : Sept.-Nov.

J. K. Maheshwari 750, 794

S. tuberosus Desf. Fl. Atlant. [illegible] Beetle in Annal. [illegible]

S. maritimus Linn. Sp. Pl. 51, 1753 in Dort. [illegible]

An erect, variable sedge. [illegible] The sedge is amphibious as it occurs either in water [illegible]

Flowers and Fruits : [illegible]
J. K. Maheshwari 3[illegible] 1958

Eriophorum Linn.

E. comosum Wall. ex Nees in Wt. Contrib. 110, 1834, FBI. 6 : 664. FUGP 3 : 366

An erect, slender, tufted sedge. Leaves usually longer than the stem, very narrowly linear. Spikelets narrowly ellipsoid, reddish-brown, numerous, in compound or decompound, irregular umbels. Bracts several, exceeding the inflorescence. Nuts trigonous-fusiform, brown, subtended by a ring of grey cottony hairs much longer than the fruit.

An amphibious sedge, occurring along the banks of ponds or in shallow water collected near Shahdara.

Flowers and Fruits : Oct.
J. K. Maheshwari 1217

120. Gramineae (Poaceae)

1. Shrubs or trees, leaves usually with a petiole-like base, articulated with the sheaths . . . . . 1. *Bambusa*
1. Herbs or shrubs, leaves usually sessile, not articulated with the sheaths
  2. Male and female spikelets in separate inflorescences . . . 2. *Zea*
  2. Spikelets all hermaphroditic with male or barren or hermaphroditic spikelets mixed in the same inflorescence
    3. Spikelets in heads with a spathe or spathelet at the base of the short peduncle :
      4. Spikelets in groups of threes; awn slender . . . 3. *Aphida*
      4. Spikelets in racemes, the lower pair forming a false involucre around the remainder . . . 4. *Isachne*

5. Spikelets without a spathe or spathes at the base
4. Inflorescence a feather or fan-shaped, silvery-white or [illegible] panicle
6. Spikelets surrounded by dense white or coloured [illegible] giving a silvery-white, purplish or coloured panicle
7. Spikelets all pedicelled, awned, panicles flabellate form 5. *Miscanthus*
7. Spikelets paired, one sessile, the other pedicelled
8. Spikelets awned 6. *Erianthus*
8. Spikelets usually awnless 7. *Saccharum*
6. Spikelets not conspicuously hairy
9. Hairs arising from the margins of the upper floral glume 8. *Thatchiamia*
9. Hairs arising from the callus . . . . . 9. *Phragmites*
9. Hairs arising from the back of floral glumes 10. *Arundo*
3. Inflorescence a single raceme or spike, terminal or terminating the culms and their branches (spikes subcapitate in *Aeluropus*)
11. Spikelets awned
11. Lower glumes with pits 11. *Eremopogon*
11. Lower glumes without pits .
12. Racemes coloured, purplish-violet 12. *Perotis*
12. Racemes not coloured .
13. Awns dark brown, together in a bundle when young, strongly geniculate and twisted later 13. *Heteropogon*
13. Awns separate, not twisted
14. Spikelets borne in the hollows of a long spike . . . . . 14. *Lolium*
14. Spikelets not borne in the hollows ;
15. Rachilla produced beyond the lower floral glume . . . . . 15. *Tetrapogon*
15. Rachilla not at all produced beyond the lower floral glume ;
16. Spikelets cottony, in fascicles, in a lax raceme 16. *Melanocenchris*
16. Spikelets borne in a continuous, compact spike, not cottony ;
17. Spikelets solitary, 2 or more flowered . . 17. *Triticum*
17. Spikelets in threes, 1-flowered 18. *Hordeum*
10. Spikelets not awned .
18. Spikelets subtended by bristles ;
19. Bristles forming a cup 19. *Cenchrus*

19. Bristles not forming a cup
20. Culms short, spikes up to 10 cm long, plants w[illegible]
20. Culms tall, spikes above 10 cm, plants [illegible] 8. [illegible]
18. Spikelets not subtended by bristles [illegible] 41. *Pennisetum*
21. Upper glumes armed with hooked spinules [illegible]
21. Upper glumes unarmed [illegible] 22. *Tragus*
22. Racemes silvery-white
22. Racemes not silvery-white [illegible] 23. *Imperata*
23. Pedicels of spikelets and joints fused, a grass found in wet places [illegible] 24. *Hemarthria*
23. Pedicels free from the joints [illegible]
24. Spikelets minute, half-sunk in the rachis, a very small, densely tufted grass [illegible] 25. *Oropetium*
24. Spikelets not sunk in the rachis
25. Keels of involucral glumes broadly winged [illegible] 26. *Phalaris*
25. Keels of involucral glumes, if present, not winged
26. Spikes subcapitate [illegible] 27. *Aeluropus*
26. Spikes cylindric, linear or oblong [illegible]
27. Spikes 20-30 cm. long, terminal spikelets distichous, laterally compressed 28. *Eragrostiella*
27. Spikes 2.5-12 cm. in length
28. Involucral glumes glabrous, palea long-ciliate, imparting a hairiness to the inflorescence, slender annuals 29. *Eragrostis*
28. Involucral glumes ciliate on the keels; racemes densely cylindric, palea absent [illegible] 30. *Alopecurus*
28. Involucral glumes glabrous, racemes longer, compact, palea ciliate, species cultivated 17. *Triticum*

5. Inflorescence a terminal, digitate spike
29. Spikelets awned [illegible]
30. Leaf margins with bulbous-based cilia, spikelets solitary or clustered, rather distant, rachilla not at all produced beyond the floral glume 31. *Aloeropus*
30. Leaf margins glabrous, spikelets secund, closely imbricate, rachilla produced beyond the lower floral glume 15. *Tetrapogon*
31. Spikes digitately 1-3 [illegible]

31 Spikes digitate, more than 3 . . . 32 *Chloris*

29 Spikelets awned

32 Racemes usually 2 spikelets broad elliptic, distichous . . . 33 *Paspalum*

32 Racemes usually more than 2

33 Spikes long spikelets plano-convex, 2 flowered, narrowly appressed; taller grasses . . . . . 34 *Digitaria*

33 Spikes short, spikelets lanceolate, 1-flowered, slender grasses . . . 35 *Cynodon*

33 Spikes long or short, spikelets laterally compressed, more than 2-flowered :

34. Rachis ending in a spikelet . . . . . 36 *Eleusine*

34. Rachis ending in a mucro . . . 37. *Dactyloctenium*

4 Inflorescence of long or short racemes or spiciform racemes arranged on a long or short central axis (sometimes Subdigitate in *Dichanthium*)

35 Racemes or spike-like racemes up to 2 cm long, pointing upwards

36. Spikelets glabrous, polished, globose, turning yellow . . . . . 38 *Paspalidium*

36. Spikelets hairy, dull green . . . 39 *Echinochloa*

35 Racemes or spike-like racemes longer than 2 cm., often much longer, ascending or spreading, if shorter, then spikelets many-flowered, shining brown :

37. Spikelets awned :

38. Lower involucral glume awned :

39 Leaves ovate-lanceolate to lanceolate; base constricted or rounded, spikes lax, long or short and narrow, sticky or not . . . . . 40. *Oplismenus*

39. Leaves linear; base not constricted or rounded, spikes dense, shorter and broader, not sticky . . . . . 39. *Echinochloa*

38 Lower involucral glume not awned; floral glume awned :

40. Panicles with a long, primary axis ; spikes shorter and broader, dense . . . . . 39. *Echinochloa*

40. Panicles subdigitate or with a short, primary axis, spikes longer and narrower :

41 Lower involucral glumes with pits . . . . . 41. *Bothriochloa*

41 Lower involucral glumes without pits . . . . . 42. *Dichanthium*

37. Spikelets not awned :

42 Spikes digitate, subdigitate or with a short primary axis :

43 Spikelets many-flowered . . . . . 36. *Eleusine*

43. Spikelets 2-flowered
44. Lower involucral glume about [illegible] spikelets [illegible] larger
44. Lower involucral glume [illegible] spikelets narrow and small [illegible] 4 *Panicum*
42. Spikes in panicles on a large axis 14 *Eragrostis*
45. Spikelets many-flowered, shining brown [illegible] 41 *Dichanthium*
45. Spikelets 2-flowered, not brown nor shining
46. Spikelets very minute about 1.5 mm long racemes very many, capillary 44 *Leptochloa*
46. Spikelets 2-3 mm long racemes up to 20, not capillary
47. Spikelets adaxial, i.e. the back of the upper floral glume facing the rachis 45 *Urochloa*
47. Spikelets abaxial, i.e. the back of the upper floral glume turned away from the rachis and lower involucral glume facing the rachis 46 *Brachiaria*
5. Inflorescence an open, pyramidal or contracted, narrow or lobulate panicle .
48. Spikelets awned :
49. Awns tripartite
49. Awns entire : . . . . . 47 *Aristida*
50. Spikelets large, 2.5-3.3 cm long 48 *Avena*
50. Spikelets small, up to 0.7 cm long
51. Panicles open; branches erect or spreading
52. Spikelets in groups at the ends of branches . . . . . 49 *Sorghum*
52. Spikelets in threes at the ends of branches . . . . . 50. *Chrysopogon*
51. Panicles close, lobulate or contracted
53. A tall grass, spikelets large, species cultivated . . . . . 49. *Sorghum*
53. Short grasses, spikelets small or minute, plants spontaneous :
54. Involucral glumes awned 51 *Polypogon*
54. Involucral glumes unawned 52 *Lophochloa*
48. Spikelets unawned :
55. Spikelets subtended by bristles 20 *Setaria*
55. Spikelets not subtended by bristles
56. Spikelets spindle-shaped, with rows of prickles on the glumes . 53. *Vetiveria*

56. **Spikelets not prickly**
57. Spikelets 1 to 2-flowered
58. Spikelets paired, one sessile the other pedicelled 49 *Sorghum*
58. **Spikelets all alike, sessile or pedicelled**
59. Spikelets 8-12 mm. long, species cultivated 54 *Oryza*
59. **Spikelets below 5 mm. in length** species wild
60. **A swollen annular callus present at the base of the spikelet** 55 *Eriochloa*
60. No swollen annular callus present at the base of the spikelet
61. Spikelets minute, about 1.5 mm. long
62. **Spikelets distributed all over the branches; grains closely invested by the glume or palea** 44 *Leptochloa*
62. **Spikelets crowded in upper parts of branches which are bare below; grains free** . . . . 56. *Sporobolus*
61. **Spikelets not less than 2 mm**
63. **Racemes usually 2-3 cm. long, dense; spikelets green or dark purple; glumes hispidulous** . . . . 57. *Arundinella*
63. **Racemes long, lax; spikelets green; glumes glabrous** . . . . . 58. *Panicum*
57. **Spikelets more than 2-flowered :**
64. **Floral glumes 1 to 3-nerved :**
65. Short grasses; upper involucral glume 3-nerved . . . . . 29 *Eragrostis*
65. Tall grasses; upper involucral glume 5-nerved; species planted . . . 59. *Halopyrum*
64. Floral glumes 5-nerved 60. *Poa*

1. **Bambusa** Schreb. nom. cons

Bambusa sp.

A shrubby or arborescent plant with stout rootstocks and forming dense clumps. Culms terete, green and shining when young, becoming golden-yellow with age. Leaves articulated on the sheath, flat, many-nerved

Cultivated in gardens. Flowering [illegible]
from Tughlak Road area.

2. **Zea** Linn

Z. mays Linn Sp. Pl. 971, 1753, Duthie [illegible]
1 : 2h, t. 5.

An erect, robust, monoec[illegible]
broad [illegible]
[illegible] cm long. Spikelets in pairs, one sessile [illegible]
lower floret male or barren; upper [illegible]
axillary, enclosed in the sheath [illegible]
Spikelets sessile, in longitudinal rows [illegible]

Cultivated as a rainy season crop in villages [illegible]

Local name : Makki
Flowers and Fruits : Winter season
J. K. Maheshwari 10

3. **Aplida** Linn.

A. aristata Linn. Cent. Pl. 2 : 7, 1756 Duthie, Fod. Cr. [illegible] Bot.
Fl. As. 5 431

A. mutica Linn. var. *aristata* Pilger in Engl. & Prantl, Nat. Pflzn.
(ed. 2) 14e 130, 1945

A. varia Hack. var. *aristata* Hack. in DC Mon. Phan. 6 196, 1889
FBI 7 : 150, Blatt. & McC. Bomb. Gr. 29, t. 20

An erect, leafy, perennial grass, branching from the base. Culms many-noded, smooth, glabrous. Leaves up to 30 × 0.5–1.5 cm. linear-lanceolate, long attenuate towards the base, almost petiolate, tapering above to a fine, setaceous point, midrib white above. Inflorescence a leafy panicle of very many, solitary, simple racemes or spikes, each enclosed in a spathe. Spikelets in trios, one sessile, two pedicelled, one of the pedicelled is reduced to a flat pedicel, the other is male. Sessile spikelet hermaphrodite; upper floral glume hyaline, cleft half way down, awned in the cleft.

Common in hedges and amongst bushes of gardens and waste places.

Flowers and Fruits : Sept.-Feb.
J. K. Maheshwari 493, near Kingsway Camp

4. **Isellema** Anderss.

I. laxum Hack. in DC Mon. Phan. 6 682, 1889, Duthie, op. cit. 43
FBI. 7 : 218, Blatt. & McC. Bomb. Gr. 113, Bot. Grasses Ind. 188.

An erect, ascending or often prostrate, perennial grass. Leaves linear, green or purplish, glabrous, margins scabrid, sheaths lax. Inflorescence

a long, narrow, racemiform panicle, of distant, axillary, pedunculate [illegible] spathe like bracts. Involucres, spikelets [illegible] pedicelled spikelets [illegible] very slender, [illegible] pedicels, [illegible] resembling the involucral. Sessile spikelets [illegible] upper floral glume reduced, awnless.

[illegible] in lawns and grassy playgrounds, where it forms [illegible] on the ground and acts as an efficient [illegible] binder. Collected several times from the playgrounds of [illegible] near Kingsway Camp.

Flowers and Fruits : Sept.-Dec.

J. K. Maheshwari 492, 1252

5. **Miscanthus** Anderss.

M. nepalensis (Trin.) Hack. in DC. Mon. Phan. 6 : 104, 1889; FBI. 7 : [illegible]; Bor. Fl. As. 5 : 311 & Grasses Ind. 196.

Eulalia nepalensis Trin. in Mem. Acad. Petersb. (sér. 6) 2 : 333, 1832 & Spec. Gram. 3: t. 332.

A tall perennial grass. Culms slender, terete. Leaves linear, flat, [illegible] green, glabrous. Racemes very many, densely crowded, spreading, flexuous, corymbose-fastigiate, fulvous-haired. Spikelets golden-brown, shining, 2-nate at each node, all pedicellate, one long and the other shortly pedicelled, awned, hairs of callus much longer than spikelets, golden-brown.

Occurs on unused ground near Ghaziabad.

Flowers and Fruits : May-July

6. **Erianthus** Michx.

Awn of upper floral glume not or scarcely exserted from spikelets . . . . . *E. procerus*

Awn of upper floral glume distinctly exserted from spikelets . . . . . *E. ravennae*

E. procerus (Roxb.) Raizada in Ind. For. 80 : 41, 1954.

Saccharum procerum Roxb. Fl. Ind. 1 : 248, 1820; Bor. Fl. As. 5 : 321.

A tall grass. Culms solid, terete, glabrous, smooth. Leaves linear-lanceolate, tapering to a fine point; midrib occupying more than half the width of the blade at the base; margins very scabrid. Inflorescence a large, silvery panicle, rachis joints 5-7 mm. long, pedicels 2.5-3.5 mm. long. Sessile spikelets 3-4 mm. long. Callus furnished with hairs as long as or exceeding the spikelet. Lower involucral glume dorsally villous.

Collected from the low-lying areas near Najafgarh, on sandy soil along the 'bunds' of fields.

Flowers : April-June

J. K. Maheshwari 1214

E. ravennae (Linn.) **Beauv.** Agrost 14 1812, FBI 7 [illegible] Kew Bull 208 1907 Duthie, Gr. N W Ind 15 & I of Gr 26 Bor Grasses Ind 151

Andropogon ravennae Linn Sp Pl 1481 1753

Saccharum ravennae Linn. Syst 88, 1774

A large, tufted perennial, up to 4 m [illegible] polished Leaves variable in length [illegible] Inflorescence a large plumose panicle [illegible] greyish or purplish Joints and pedicels of the racemes [illegible] with thickened tips Spikelets paired [illegible] one sessile [illegible] the other pedicellate, both [illegible] callus hairs purplish or brownish

Common on the ground along railway lines and canal banks in marshes, on unused ground near temporary ponds and ditches and along the raised embankments around fields, etc It is especially [illegible] the trans-Jamuna area near Shahdara and Hindan River where it grows in dense tufts. The fibre is used in making chairs, 'maddas' 'chappars' or temporary house-roofs and ropes

Local name : Moonj; Sarkara
Flowers and Fruits : Sept.-Jan.
J K. Maheshwari 510, 515; 549

7. **Saccharum** Linn.

Stems silky below the panicle — *S spontaneum*
Stems glabrous below the panicle — *S officinarum*

S. spontaneum Linn Mant 183, 1771; Duthie, Gr N.W Ind 15, Indig. Fod Gr 57 & Fod. Gr 25; FBI 7: 118, Blatt & McC Bomb Gr 45, Bor. Grasses Ind 214.

A very variable, tall, perennial, densely tufted grass Leaves very long narrow-linear acuminate, coriaceous Flowering panicles 5-60 × 5-10 cm, conical or lanceolate to oblong, branches whorled, spreading or slightly ascending, with the callus hairs closely appressed to the branches, peduncle softly silky just below the panicle Spikelets paired, one pedicellate, the other sessile, 1-flowered, hermaphrodite

A very pernicious grass, common in unused ground, fallow fields, near canals, ponds and marshy places, and along areas on both sides of railway lines It is eradicated by burning The culms are extensively used in making 'chicks' The foliage is used against frost for protection of vegetables growing in fields.

Local name : Kans ; Kana; Sarkanda
Flowers and Fruits : Sept.-Dec
J. K. Maheshwari 420; 1253

S. officinarum Linn. Sp Pl. 54, 1753, FBI 7 118, Blatt & McC op cit, 46.

An erect, tall, many-noded grass glabrous or with appressed hairs below the panicle, waxy at least below the nodes. Leaves rigid, linear lanceolate, acuminate, spreading drooping at the tip. Panicles pyramidal, very large, dense, spreading primary branches verticillate or semi verticillate, filiform. Spikelets lanceolate, surrounded by dense, silky white hairs.

Cultivated for its juicy culms.

Local name : Ikh

J. K. Maheshwari, cultivated

8. Thysanolaena Nees

T. maxima (Roxb.) Kuntze Rev. Gen. 794, 189. Bor. Fl. As. 5 : 176.

Agrostis maxima Roxb. Fl. Ind. 1 : 319, 1820.

Thysanolaena agrostis Nees in Edinb. N. Phil. Jour. 18 : 180, 1835; FBI. 7 : 61.

T. procera Mez in Bot. Archiv 1 : 27, 1922; Blatt. & McC. op. cit. 20.

A perennial, tall, handsome grass. 2-3.5 m. tall. Culms rounded polished. Leaves large broad lanceolate many-nerved. 30-60 × 5-10 cm. Panicles large soft, glabrous, of very numerous, erect or suberect, filiform branches which divide and subdivide bearing numerous minute spikelets. Spikelets acuminate, pedicellate. Involucral glumes subequal, hyaline. Lower floral glume lanceolate, empty, upper hermaphrodite, ovate, ciliate with long, erect, white hairs. Grains very minute.

Planted as an ornamental grass in hedges of gardens.

Flowers and Fruits : Nov. Feb.

J. K. Maheshwari 795, Nicholson Gardens.

9. Phragmites Trin.

P. maxima (Forsk.) Blatt. & McC. Bomb. Gr. 202, 1935.

Arundo maxima Forsk. Fl. Aegypt.-Arab. 24, 1775.

Phragmites karka Trin. ex Steud. Nom. 2 : 324, 1841, Bor. Cr. U.P. 179.

Arundo phragmites Linn. Sp. Pl. 81, 1753.

A tall, erect perennial, up to 3 m. tall. Culms hollow, terete, smooth. Leaves linear, acuminate, coriaceous, bifarious. Panicles large, erect, decompound, branches filiform, scaberulous. Spikelets several-flowered hermaphrodite, callus densely clothed with long, silky hairs. Glumes glabrous. Caryopsis free, oblong.

Common in wet places near the banks of Okhla Lake, Hindan River and water ponds near Shahdara.

Flowers and Fruits : Winter season.

J. K. Maheshwari 572

10. Arundo Linn.

A. donax Linn. Sp. Pl. 81, 1753; Duthie, Gr. N. W. Ind. [illegible] FBI. 7 : 302; Blatt. & McC. [illegible]

A tall perennial grass with [illegible] hollow, many-noded, green, glaucous [illegible] Spikelets 8-10 [illegible] lower glumes glabrous. [illegible] long-silky on the back [illegible] lower half.

Cultivated for its hollow culms which are used in [illegible] often grown in hedges of gardens.

Local name : Narhal, Narsal
Flowers and Fruits : Sept.-Feb
J. K. Maheshwari 512

11. Eremopogon Stapf

E. strictus (Roxb.) A. Camus in Ann. Soc. Linn. Lyon (n.s.) 68 : 208, 1922; Raizada in Ind. For. 80 : 45, 1954.

Andropogon strictus Roxb. Hort. Beng. 82, 1814 nom. nud. & Fl. Ind. 265, 1820.

An erect or decumbent, tufted, very slender grass, up to 60 cm. tall. Stems geniculately ascending, lower portion leafy. Nodes bearded. Leaves linear, up to 10 cm. long. Spikes solitary, about 5 cm. long, on long peduncles. Joints and pedicels with long, silky hairs. Spikelets paired, the sessile one bisexual, the pedicelled one male, both with a circular pit on the back of lower involucral glumes. Upper floral glume of the sessile spikelets passing into a geniculate awn. Pedicelled spikelets awnless.

A sporadic grass occurring in the hilly tracts. Common on uneven plateaux near Mehrauli in dry, gravelly, reddish-brown soils and in the neighbourhood of New Cantonment.

Local name : Zargn
Flowers and Fruits : July-Oct.
J. K. Maheshwari 1154, 1169, near Gurukul (Faridabad)

12. Perotis Ait.

P. indica (Linn.) Kuntze, Rev. Gen. 2 : 787, 1891; Blatt. & McC. Bomb. Gr. 220, t. 147; Bor. Grasses Ind. 611.

Anthoxanthum indicum Linn. Sp. Pl. 28, 1753.

Perotis latifolia Ait. Hort. Kew. 1 : 85, 1789; FBI. 7 : 98.

An annual, tufted grass with geniculate, suberect, ascending, glabrous stems terminating in inflorescences. Leaves short, 3.5 x 0.7-1 cm., ovate

[illegible] from a broad amplexicaul base, glaucous. Racemes slender [illegible] spike-like [illegible] purplish violet. Spikelets narrowly linear [illegible] long awned. Grains almost cylindrical [illegible]

[illegible] common in wet gravelly unused places near temporary ponds and [illegible] the unused ground near Safdarjang. It grows abundantly in sandy, damp situations.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 285, near Okhla

13. Heteropogon Pers.

H. contortus (Linn.) Roem. & Schult. Syst. 2. 836, 1817. Duthie Gr. N.W. Ind. 19 & Fod. Gr. 32 t. 19, Blatt. & McC. Bomb. Gr. 109, t. 71. Bor, Grasses Ind. 163

Andropogon contortus Linn. Sp. Pl. 1045. 1753. FBI. 7. 199

An erect or decumbent, tufted slender perennial, about 1 m. high. Leaves linear, flat. Inflorescence a single terminal raceme or more often several flowering branches. Spikelets closely imbricate, the lower ones awnless male or neuter, the upper ones long-awned, female. Sessile, female spikelets hispid, upper floral glume reduced to an awn. Pedice late spikelets hispid at the back with long, bulbous-based hairs.

Common on the Ridge and adjacent hilly tracts near Faridabad and Mehrauli. It is a very troublesome grass on account of the awns which get twisted together like the strands of a rope. It serves as a good fodder grass if used before flowering.

Local name : Daabsuli; Surbala
Flowers and Fruits : Oct.-Dec.
J. K. Maheshwari 1040

14. Lolium Linn.

L. temulentum Linn. Sp. Pl. 83, 1753 ; Bor, Fl. As. 5 : 66 & Grasses Ind. 546

An erect annual, 30-100 cm. high. Culms tufted, solitary, swollen at the nodes. Leaves scabrous, linear, acute. Spikes erect, straight, with up to 30 spikelets. Spikelets 5 to 10-flowered. Florets all hermaphrodite. Lower involucral glume absent or hidden in the hollows of the contiguous axis. Floral glumes elliptic-oblong, 5-nerved, awn subterminal, straight. Palea 2-keeled. Grains elliptic-oblong, grooved in front.

Common as a weed in most places or comes mixed up in the fields of wheat, barley, etc. The grains are said to be poisonous.

Flowers and Fruits : Oct.-Feb.
J. K. Maheshwari 1062

Lower floral glume [illegible]

Lower floral glume ovoid, hirsute all over

T. tenellus (Koen. ex R. [illegible] 1918. Rarada in Ind. For. 80, 1954; Bor, Grasses [illegible]

Chloris tenella Koen. ex Roth, [illegible] Fl. Ind. I : 330, 1820; FBI. 7 : [illegible]; Blatt. & McC. Bomb. Gr. 254.

An erect, weak annual branching from the base. Leaves [illegible] lanceolate, acuminate, flacid. Spikes usually solitary, [illegible] less large, 7 x 4 mm. bifarious, 3 to 4 awned. Involucral glumes [illegible] upper one shortly awned. Glumes of hermaphrodite floret broad [illegible] truncate, awned, paleate, the next or second floral glume [illegible] similar; the other still smaller and awned. Grains oblong, light [illegible]

Common on the Ridge as well as in the neighbouring and [illegible] tracts amongst the shrubs and in depressed places on gravelly soil.

Flowers and Fruits : July-Oct.

J. K. Maheshwari 340, Haux Khas.

T. villosus Desf. Fl. Atlant. 2 : 389, t. 255, 1799; Duthie, Gr. N.W. Ind. 33 & Fod. Gr. 55, t. 68; Bor, Grasses Ind. 475.

Chloris villosa Pers. Syn. I : 87, 1805; Aitchis. Cat. Punjab 1[illegible] 67; FBI. 7 : 291; Blatt. & McC. Bomb. Gr. 254.

A stout, tufted perennial with a woody base, 15-25 cm. tall. Leaves linear, acute, flat, rigid; ligule obscure. Spikes 1-3, erect. Spikelets obconic, with 4 unequal awns. Involucral glumes awned; upper one 2-toothed at the tip. Glumes of the hermaphrodite floret broad ovate or suborbicular, hirsute all over with long, silky hairs, the next glumes barren, hirsute, the next small, the last reduced to an awn.

Rare.

16. Melanocenchris Nees

M. jacquemontii Jaub. & Spach, Ill. Pl. Or. 4 : 36, t. 325, 1851; Santapau in RBSI. 16(1) : 358, 1953; Bor, Grasses Ind. 473.

M. royleana Nees ex Steud. Syn. Pl. Glum. 218, 1854; Duthie, Gr. N.W. Ind. 33 & Fod. Gr. 54, t. 67.

Gracilea royleana Hook. f. in FBI. 7 : 284, 1896; Blatt. & McC. Bomb. Gr. 248.

A small, slender, tufted annual, up to 15 cm. tall, spreading or ascending. Leaves linear-lanceolate, filiform, acutely pointed, margins distantly ciliate. Inflorescence up to 6 cm. long, of fascicles of cottony spikelets; rachis flexuous. Awns of involucral glumes longer than the glumes, awn of floral glume short. Grains oblong, brownish. Upper floral glume 3-toothed at the apex, paleate.

[illegible] the Ridge and rocky stones and in the crevices in [illegible] other places and [illegible] of the district.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 1046, Haur Khas.

17. Triticum Linn.

T. aestivum Linn. Sp. Pl. 85, 1753. Hook. Fl. As. 5 : 84. Burtt & M. Bomb. Gr. 279.
T. sativum Lamk. Fl. Fr. 3 : 625, 1778. Duthie, Gr. N.W. Ind. 45 & Fod. Gr. 68.
T. vulgare Vill. Hist. Pl. Dauph. 2 : 153, 1787. FBI. 7 : 367.

An erect tufted annual. Leaves linear-lanceolate or [illegible] linear, flat, acuminate. Spikes erect, curved at maturity, compact. Spikelets [illegible] about 11 × 5 mm., laterally compressed, 3 to 5-flowered. Involucral glumes obtuse or shortly awned. Floral glumes mucronate or [illegible]-awned, hermaphrodite. Grains oblong, ventrally grooved, free within the floral glume and palea or adhering to the latter.

Cultivated as a rabi crop. A disease 'foot rot of wheat' due to *Fusarium* sp. causes considerable damage to crops in the seedling stage in the neighbourhood of Delhi.

Local name : Gehu
Flowers and Fruits : Jan.-March
J. K. Maheshwari 656

18. Hordeum Linn.

H. vulgare Linn. Sp. Pl. 84, 1753. Duthie, Gr. N.W. Ind. 45 & Fod. Gr. 69, t. F, f. 32, FBI. 7 : 371.

An erect, glabrous, annual grass, up to 120 cm. high. Leaves linear, elongate, 2-auriculate. Spikes erect at first, irregularly 4-sided. Spikelets in threes, about 10 × 4 mm., one-flowered or the lateral imperfect. Floral glume tapering into a long, straight or recurved awn. Grains ovoid, narrowly oblong, tightly enclosed and adhering the lemma and palea.

Cultivated as a rabi crop in the district.

Local name : Jow
Flowers and Fruits : Jan.-March
J. K. Maheshwari 1159

19. Cenchrus Linn.

Involucral bristles not spinose, the inner plumose, even if thickened below, the tips always filiform . . . . . C. ciliaris

[illegible]

C. ciliaris [illegible] Mant. 3 2 1771 Razzada in Ind. [illegible]

Pennisetum cenchroides Rich. in Pers. Syn. 1 [illegible] Punjab Pl. 162, Duthie. Gr. N. W. Ind. 10 [illegible]

P. ciliare Link, Hort. Berol. 1 213 1827 Blatt. & McC. Bom. [illegible]

A tufted perennial, erect or decumbent, much-branched perennial [illegible] Leaves linear, tapering to a fine point. Racemes cylindric, dense [illegible] or purplish, up to 15 × 1 cm. Involucels of 2 series of bristles, outer bristles numerous, fine filiform, inner ones flattened and thickened at the base, ciliate, connate below into a ring. Spikelets oblong-lanceolate [illegible] in each involucel.

Common throughout in all types of soils and grows even in dry sandy soils often associated with *C. setigerus* Vahl. with which it forms a dense herbaceous mat. Once established it is not easily killed out. Occurs on the Ridge amongst the bushes of *Capparis decidua* Edgew. and other thorny shrubs. Used as fodder.

Local name : Anjhan; Anjan
Flowers and Fruits : Major part of the year
J. K. Maheshwari 1, 1041; 1042

C. setigerus Vahl, Enum. 2 : 395, 1806, Razzada loc. cit.
C. biflorus Hook. f. in FBI. 7 : 89, 1896 (non Roxb.).

An annual, tufted grass with erect or ascending glabrous stems. Nodes knotted. Leaves linear-lanceolate, finely acuminate, rough with long, scattered hairs, 8-20 × 0.5-0.7 cm. Racemes solitary, cylindric, green at first, turning black at maturity. Involucels usually with 3 spikelets, the outer row of bristles short, erect, the inner row erect, subulate-lanceolate, all connate into a short cup. Spikelets ovate-oblong, 2-flowered. Lower floret barren, upper hermaphrodite.

One of the most pernicious weeds, common on the Ridge as well as in other areas, often gregarious and growing in tufts on a wide range of habitats, usually on dry, sandy or gravelly soils and dominating the vegetation of unused lawns. It is considered to be a good pasture grass.

Local name : Anjan; Kala anjan
Flowers and Fruits : During and after the rains
J. K. Maheshwari 40

C. biflorus Roxb. Fl. Ind. 1 : 238, 1820, FBI. 7 : 89, Duthie, Gr. N. W.

Ind 9 , Acharyar, op cit 121 ; Blatt. & McC. Bomb. Gr. 185, 1
[illegible] Bor Grasses Ind. 287.
[illegible] De [illegible] Cat Hort Monsp 1878 4 1839 & in Linnaea
[illegible] Bericht 63 1839 FBI 7 90

A [illegible] generally ascending simple or branching grass Leaves [illegible] flat [illegible] Racemes 6-12 cm long solitary cylindric [illegible] flowered bristles thick [illegible] erect [illegible] spreading or reflexed [illegible] the outer short [illegible] spines Caryopsis ovoid-oblong pale [illegible]
[illegible] dry soil of waste ground [illegible]
Also met along canal banks or in shallow water where it grows partly submerged. The young plants are used as fodder

Local name . Chirchitta; Anjhun; Bhurat
Flowers and Fruits : July-Oct
I K Maheshwari 313, near Okhla

20. Setaria Beauv. nom. cons.

Bristles retrorsely barbellate . . . . . *S. verticillata*
Bristles antrorsely barbellate :
Upper involucral glume as long as the upper floral glume, the latter quite smooth . . . . . *S. viridis*
Upper involucral glume shorter than the upper lemma, the latter rugose .
Panicles interrupted, narrow, lobed . . . . *S. tomentosa*
Panicles spicaform, continuous, cylindric
Spikelets 3 mm long upper floral glume broad dorsally strongly curved on the back and slightly keeled upwards . . . . . *S. glauca*
Spikelets 2 25 mm. long; upper floral glume narrow, dorsally gently curved and not at all keeled *S pallidifusca*

S. verticillata (Linn) Beauv Agrost. 51, 1812, Aitchis op cit. 162, Duthie, Gr N W Ind 9, FBI 7 · 80, Blatt. & McC op cit 174, Bor, Grasses Ind. 365.

Panicum verticillatum Linn. Sp. Pl 82, 1762.

An annual grass Culms erect ascending, branching from the base, with a conspicuous channel on one side variable in length Leaves linear or linear-lanceolate, tapering to an acute point, 15-25 × 1-2 cm. Panicles spike-like erect, straight or curved, cylindric or oblong Bristles rough, one or more with reverse barbs or teeth. Spikelets ellipsoidal. Lower floret sterile; upper one hermaphrodite, elliptic-oblong, plano-convex, coriaceous. Stigmas purple.

Common on the Ridge as well as in other parts, growing amongst the shrubs in shady, moist areas

Local name : Lapteri
Flowers and Fruits : During and after rains.
J. K. Maheshwari 149

S. viridis (Linn.) Beauv. Agrost. 51 [illegible] 3. f. 3 [illegible] 2, Bor. F. [illegible] 5. 287 & Grasses Ind. 365.
Panicum viride Linn. Syst. 870 1759

A tufted weak erect or ascending annual [illegible] branches [illegible] Leaves linear-lanceolate, tapering to a fine point [illegible] Inflorescence an erect oblong or linear cylindric spike, 2-5 × 0.5 cm [illegible] greenish. Spikelets elliptic deciduous. Grains broad elliptic.

Found occasionally in marshy places.

Flowers and Fruits : Oct.-Feb.
J. K. Maheshwari 230, Shahdara

S. tomentosa (Roxb.) Kunth, Rév. Gram. 1 47, 829 Ra[illegible] Ind. For. 80 40, 1954 Bor, Grasses Ind. 365
Panicum tomentosum Roxb. Fl. Ind. 1 303 1820
Setaria intermedia Roem. & Schult. Syst. 2 489 18[illegible] FBI. 7 79 Blat. & McC. Bomb. Gr. 174

A loosely tufted annual. Culms geniculately ascending, glabrous, usually branching from base. Leaves linear or narrowly anceolate tapering to a fine point, thin flaccid 3-15 × 0.4-1.[illegible] cm. Panicles linear to narrowly lanceolate, lax interrupted, 4-10 × 1-2 cm. the upper branches reduced to subsessile clusters or solitary spikelets supported by a bristle. Spikelets about 2 × 1.5 mm. ovate to elliptic. Upper floret fertile, floral glume boat-shaped, prominently transversely wrinkled, paleate.

Common in dried compound of bungalows and gardens as well as in moist localities near canals, ponds and ditches, often growing in abundance.

Flowers and Fruits : June-Feb.
J. K. Maheshwari 831; 1210

S. glauca (Linn.) Beauv. Agrost. 51, 1812, Aitchis. op. cit. 162, Duthie, Gr. N.W. Ind. 8; FBI. 7 : 78, in part
Panicum glaucum Linn. Sp. Pl. 56, 1753.

A tufted, annual grass, up to 150 cm. high. Culms simple or branched, erect or ascending. Leaves linear-lanceolate, tapering to a fine point. Racemes spiciform, erect, dense, cylindric, variable in length, yellowish at maturity. Bristles 6-12. Spikelets 3 × 1.5 mm., broadly oblong or elliptic, 2-flowered, lower male or barren, upper hermaphrodite fertile florets marked with numerous transverse ridges.

Common in cultivated soils and waste places, growing in tufts. It is found in wide variety of habitats. The cattle are fond of this grass and it is considered to be a good fodder.

Local name : Bandarghas
Flowers and Fruits : May-Sept
J. K. Maheshwari 5[illegible] 708

S. pallidifusca Stapf & C. E. Hubb. in Kew Bull. 259, 1930; B. & F. A. F. 291 & Grasses Ind. 363

An annual tufted smooth grass usually 30-60 cm. high. Leaves [illegible] near, long-tapering to a fine point. Spikes [illegible] branches reduced to involucral bristles, supporting a [illegible] perfect spikelet. Spikelets 2.25 cm. long.

Common in wet situations near ponds, ditches, etc. It closely resembles *S. glauca* Beauv., from which it is difficult to separate.

Flowers and Fruits : Aug.-Oct.

21. Pennisetum Rich.

P. typhoides (Burm. f.) Stapf & C. E. Hubb. in Kew Bull. 27, 1933; Bor. Fl. As. 5, 297 & Grasses Ind. 350.

Alopecurus typhoides Burm. f. Fl. Ind. 27, 1768.

Pennisetum typhoideum Rich. in Pers. Syn. 1 : 72, 1805, in part; FBI 7 : 82.

A tall, erect, stout annual, up to 3 m. high. Leaves 5-60 × 1-4 cm., linear to linear-lanceolate. Panicles spike-like, cylindric, very dense, rachis closely beset with the stalked, persistent involucres. Involucres of numerous, ciliate bristles. Spikelets deciduous, oblong. Lower floret male or barren, upper hermaphrodite. Caryopsis obovoid or obovoid-ellipsoid, smooth, free.

Cultivated for its grain.

Local name : Bajra
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 1458

22. Tragus Hall. nom. cons.

T. biflorus (Roxb.) Schult. Mant. 2 : 305, 1824, Bor. Fl. As. 5 : 162.

Lappago biflora Roxb. Fl. Ind. 1 : 284, 1820.

Tragus racemosus Hook. f. in FBI. 7. 97, 1896 (non Scop. 1777).

A tufted, prostrate, ascending or erect grass, up to 15 cm. tall, simple or branching, leafy below. Leaves linear-lanceolate, rigid, with pectinately ciliate margins. Racemes spike-like, solitary, terminal, 5 × 0.7 cm. Spikelets in groups of two, facing each other and appearing like a single spikelet with two, equal, echinate glumes, 1-flowered, 5 × 2 mm. Upper involucral glume with hooked spines along the ribs. Grains linear-oblong, pale brown.

Common on the Ridge in tufts on gravelly soils or amongst stones,

[illegible]

Flowers and Fruits : July-Oct.
J. K. Maheshwari 260

23. **Imperata** Cyrl

I. cylindrica (Linn.) Beauv. Agrost. 165, t. 5 [illegible] Bln & McC., Bomb. Gr 42, t. 30 Bor. [illegible]
Lagurus cylindricus Linn. Syst. 878 1749 [illegible]
Imperata arundinacea Cyrl Pl Rar Neap 2 26 [illegible]
[illegible] N W Ind 14 FBI 7 196

An erect simple slender grass 60 cm or less [illegible] stem [illegible] rootstocks Leaves linear flat, acuminate [illegible] panicles very spike-like cylindric very dense branches [illegible] very numerous crowded, appressed. Fruiting panicles [illegible] with wide-spreading, soft, callus hairs Spikelets lanceolate Anthers orange Grains small, oblong.

Common in moist, public lawns and gardens, near ponds and [illegible] and as an undergrowth in fruit orchards, often becoming abundant and dominating the vegetation From a distance it gives an appearance of a silvery-white carpet spread over the landscape. It is attacked by a rust.

Flowers and Fruits : June-Oct.
J. K. Maheshwari 1063, Roshanara Gardens

24. **Hemarthria** R. Br

H. compressa (Linn. f) R. Br Prodr 207 1810. Bath & McC Bomb Gr. 31, Bor. Grasses Ind. 161
Rottboellia compressa Linn f Suppl 114. 1781; FBI 7 153 in part

A hygrophilous, perennial grass. Stems erect from a decumbent rooting base, compressed, leafy Leaves 5-12.5 × 0.3-0.5 cm., linear Racemes erect, straight or curved, joints of the rachis thickened by the fusing of the pedicel Sessile spikelets 4-5 mm long, lower glume with a flat back, linear-oblong or oblong; upper one concave, membranous, closely applied and adnate to the excavation in the rachis flora, glumes hyaline. Pedicelled spikelets hermaphrodite or male

Common in marshes, along borders or in paddy fields, canal banks and other moist places.

Flowers and Fruits : June-Sept.
J. K. Maheshwari 700, Najafgarh

25. **Oropetium** Trin.

O. thomaeum (Linn f) Trin Fund Agrost. 98, t 3 1820 Duthie. Gr

[illegible] Blatt & McC Bomb. Gr 247; Bor [illegible]

[illegible] Linn F. Suppl 105, 1781

[illegible] tufted annual grass, 5-8 cm. tall. [illegible] Spikes [illegible] Spikelets 1-flowered [illegible]

[illegible] as well as abundant in the R[illegible] [illegible] pioneer [illegible] the Ridge and [illegible] and especially in crevices of rocks in [illegible] the [illegible] *Riccia* sp. and [illegible] dense [illegible] As the [illegible] dries up *Riccia* sp. dies leaving [illegible] patches [illegible] grass [illegible] fruiting state either [illegible] or [illegible] except [illegible]

English name : Rock grass
Flowers and Fruits : July-Sept
J. K. Maheshwari 1038

26. Phalaris Linn

P. minor Retz Obs 3 8 1783, Duthie, Gr N W Ind 25, Aitch s Cat Punjab Pl. 158; FBI 1 : 221, Bor, Grasses Ind 616.

An erect or decumbent annual. Culms branched, nodes swollen Leaves glabrous, finely pointed, linear-lanceolate, 15-25 × 0 7 1 2 cm Panicles spike-like, contracted, cylindric in outline, erect, 1 3 × 1 5 cm Spikelets strongly laterally compressed, flattened, 1 flowered and with 1 or 2 reduced scales or imperfect glumes below the floral glumes Empty glumes boat-shaped, strongly keeled, keel broadly winged Floral glumes about half the length of empty glumes, keeled. Grains free

Common in the fields of wheat, barley, etc Used as an animal fodder

Local name : Chirriya-bajra
Flowers and Fruits: Feb.-March
J. K. Maheshwari 602, Najafgarh fields

27. Aeluropus Trin

A. lagopoides (Linn) Trin ex Thw. Enum 374, 1864, sphalm "*lagopodioides*"; Druce in Rep Bot Exch. Club Brit Isles 603, 1917, Bor, Grasses Ind 380.

Dactylis lagopoides Linn Mant 33, 1767

Aeluropus villosus Trin ex C A Mey, Verz. Pfl. Cauc. 18, 1831; FBI 7 : 334

A rigid perennial herb, with long, wiry roots. Stems 15-30 cm., densely tufted, hard, erect or prostrate, terminating in a naked, slender

[illegible] peduncle. Leaves subulate [illegible] Lower involucral glume [illegible] nervous.

Collected on one occasion along the sandy banks of [illegible] near Model Town.

Flowers : June

J. K. Maheshwari 1098

28. **Eragrostiella** Bor

E. bifaria (Vahl) Bor in Ind. For 66 270, 1940 & Graves Ind. 494 Santapau in RBSI 16(1): 352, 1953

Poa bifaria Vahl, Symb. Bot 2 19, 1791 Roxb. Fl Ind [illegible]

Eragrostis bifaria Wt. ex Steud Nom 1 362 1840 [illegible]

Blatt & McC. Bomb Gr 241

An erect, densely tufted, perennial grass. Stems simple, glabrous. Leaves narrowly linear, acute, rigid, smooth sheaths glabrous. Spikelets secund distichously spreading in a long, simple, terminal [illegible] compressed, oblong, many-flowered olive-grey or green. Involucral glumes strongly 1-nerved, keeled. Floral glumes broad ovate. Palea [illegible] Palea with ciliate wings to the keel

A new record from Delhi State. Common in the rocky tracts near Gurukul, Faridabad where it grows amongst the wet soil between boulders and similar rocky places. Also found on the New Delhi Ridge

Flowers and Fruits : Aug.-Nov

J. K. Maheshwari 1061, 1238

29. **Eragrostis** Beauv

Rachilla of spikelets tough, persistent, floral glumes falling away from its base upwards

Leaf margins glandular :

Lower involucral glume 1 to 3-nerved, upper 3-nerved . . . . . *E. ciliatensis*

Involucral glumes 1-nerved . . . . . *E. poaeoides*

Leaf margins eglandular :

Spikelets versatile, about 2 cm long, narrowly linear, branches panicles solitary . . . . . *E. tremula*

Spikelets not versatile, small, 4 mm long or less, mouth of leaf sheaths bearded . . . . . *E. pilosa*

Rachilla of spikelets more or less jointed and breaking up from above downwards :

Panicles short, compact, spike-like, cylindric, about 2 cm long . . . . . [illegible]

[illegible]

E. ciliaris [illegible] Blatt. & McC. Bomb. Gr. [illegible] 237, t. 157 [illegible] FBI [illegible]

Poa ciliaris L. Sp. Pl. 70, 1753 [illegible]

[illegible] grass [illegible] cm tall. [illegible] branched, leafy. Leaves up to 20 [illegible] cm [illegible] open, branches spreading [illegible] erect, ovate-oblong [illegible] longer than their pedicels 1.2 [illegible] 4 cm [illegible] Glumes with [illegible] keels. Grains [illegible] brown. [illegible] common on the Ridge and in the plains during the monsoon period.

Flowers and Fruits : May-Oct.
J. K. Maheshwari 1064

E. poaeoides Beauv. Agrost. 162, 1812; Duthie, Gr. N.W. Ind. 38; A. Chis. Cat. Punjab Pl. 170; Sprague & C. E. Hubb. in Kew Bull. 17, 1933; Bor. Grasses Ind. 512.

Poa eragrostis Linn. Sp. Pl. 68, 1753.

Eragrostis minor Host, Gram. Austr. 4 : 15, 1809 (in nota) & Flor. Austr. 1 : 135, 1827; Blatt. & McC. Bomb. Gr. 238, t. 158.

An annual, tufted grass, 15-45 cm. tall. Leaves linear, margins definitely glandular; sheaths bearded at the mouth. Panicles ovate to oblong, branches spreading when mature. Spikelets narrowly oblong, pale green or purplish, longer than the pedicels, 8-15 × 2 mm. Rachilla persistent. Grains about 0.5 × 0.4 mm., brown, rounded.

Common throughout during the monsoon period on moist soils.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 1310

E. tremula Hochst. ex Steud. Syn. Pl. Glum. 269, 1854; FBI. 7 : 320; Blatt. & McC. Bomb. Gr. 239, t. 159; Stewart, Gr. N.W. Ind. 422.

Poa tremula Lamk. Tabl. Encycl. 1 : 185, 1791.

A tufted, erect or ascending annual, 15-60 cm. tall. Leaf margins eglandular. Panicles very diffuse, branches solitary, filiform, ascending. Spikelets 10-20 × 2-3 mm., narrowly linear, branchlets with long, white hairs in all axils of the panicles. Floral glumes broad ovate, 3-nerved. Grains nearly globose.

A common grass near Najafgarh in fallow and cultivated fields, on

damp, sandy, yellowish-br[illegible] spikelets. Used as fodd[illegible]

Local name : Dholphulia
Flowers and Fruits : Aug[illegible]
J. K. Maheshwari 1319

E. pilosa (Linn.) Beauv. Agrost. 71, 1812. Duthie, Fl. Upper Gang. Plain 2, 1903; Fl. Punjab Pl. 170, Blatt. & McC. Bomb. Gr. 241; [illegible] Bor, Grasses Ind. 512.
Poa pilosa Linn. Sp. Pl. 68, 1753.

A densely tufted, annual grass. Culms [illegible] soft, 30 cm. high. Leaves narrow, [illegible] near scabrous [illegible] sheaths bearded. Panicles erect or inclined, spreading at anthesis, [illegible] hairy; branches capillary, flexuous, [illegible] spikelets. Spikelets erect, 3-5 [illegible] long, linear or narrowly oblong, [illegible] 10-flowered. Floral glumes 3-nerved, the lateral nerves fading above the middle. Keel of palea subdenticulate. Anthers [illegible] obovoid or ellipsoid.

Common in wet places or near margins of ponds and canals or in marshy places.

Local name : Kiwai
Flowers and Fruits : May-Nov.
J. K. Maheshwari 1226, 1783

E. ciliaris (Linn.) R. Br. in Tuckey, Narr. Exp. Congo, App. 478, 1818.
Bor, Grasses Ind. 506.
Poa ciliaris Linn. Syst. 875, 1759.

An erect or bent, slender annual, about 10 cm. high. Culms geniculately ascending, glabrous. Leaves very narrow. Panicles compact, short, 2 cm. or so, cylindric, spike-like, hairy due to the presence of long cilia on palea, branches divided from base. Spikelets pale, densely aggregated, 6 to 12-flowered, strongly compressed. Floral glumes about 1 mm. long, spreading.

Common in sandy soil of cultivated fields, waste ground and in moist, sandy-loamy soil near canal banks, etc. Var. *ciliaris* Stapf ex Hook. f. is also reported from Delhi by J. D. Hooker (1896) and Bor (1960).

Local name : Panghas
Flowers and Fruits : During and after rains
J. K. Maheshwari 1433

E. viscosa (Retz.) Trin. in Mem. Acad. Petersb. (ser. 6) 1: 397, 1831; Blatt. & McC. Bomb. Gr. 233; Bor, Gr. U.P. 127, Fl. As. 5: 95 & Grasses Ind. 515.
Poa viscosa Retz. Obs. 4 : 20, 1786.

Eragrostis tenella Roem. & Schult. var. *viscosa* Stapf in FBI 7: 3[illegible]5 896

A tufted, sweet-scented grass [illegible] tall. Stems and rachis of panicle, pedicels and glumes with [illegible] scattered minute glands. Leaves flat or convolute, erect, with [illegible] Panicles dense, cylindric or oblong, feathery, branches numerous more [illegible] less spreading. Spikelets often purplish, rachilla readily breaking up. Grains pale brown, polished.

Common in damp places. It much resembles *E. tenella* Roem. & Schult. which, however, is not viscous.

Flowers and Fruits : May-Oct.

E. tenella (Linn.) Roem. & Schult. Syst. 2 : 576, 1817, FBI 7 : 315 Bat. & McC. Bomb. Gr. 232. Bor. Grasses Ind. 5[illegible]3

Poa tenella Linn. Sp. Pl. 69, 1753

An erect or geniculately ascending tufted annual 15-30 cm. tall. Culms glabrous, smooth. Leaves narrowly linear, tapering to a fine point. Panicles plumose, loose and open or contracted, green or purplish. Spikelets 2-4 [illegible] mm. oblong, rachilla breaking up from above downwards. Paleas ciliate on the keels.

Common and abundant during the monsoon period on moist soil, especially in open places.

Flowers and Fruits : May-Oct.
J. K. Maheshwari 12

E. diarrhena (Schult.) Steud. Syn. Pl. Glum. 266. 1854. Bor. Grasses Ind. 507

Poa diarrhena Schult. Mant. 3 : 616. 1827.

Eragrostis interrupta var. *diarrhena* Stapf ex Hook. f. in FBI 7 : 316, 1896

A tufted, erect, slender grass, from a geniculate and ascending base. Leaves slender, narrow, flat. Panicles contracted, long, narrow, of appressed or shortly spreading, numerous, fasciculed or subwhorled, spicate branches giving the panicle a lobed appearance. Spikelets very minute, often purplish or pinkish in colour, ovate to linear. Floral glumes obtuse.

Common in dry places or damp soil near banks of rivers and ponds. The colour of the inflorescence and the angle at which the inflorescence branches spread is very variable.

Local name : Lamp
Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1057

30. Alopecurus Linn.

A. nepalensis Trin. ex Steud. Syn. Pl. Glum. 148, 1854, Stewart, Gr. N.W. Ind. 436, Bor. Grasses Ind. 393

A prostrate or ascending densely tufted grass. Culms slender, leaves glabrous, linear. Inflorescence digitate, [illegible] toward the ones erect [illegible] green or purplish. Spikelets [illegible] elliptic-oblong, closely overlapping. Glumes [illegible] on the keels. Awn absent. Caryopsis laterally compressed, free.

Collected once from near a dirty water ditch in village Uzirpur.

Flowers and Fruits : Feb.

J. K. Maheshwari 1058

31. Alloteropsis Presl emend. Hitch.

A. cimicina (L. ex) J. S. apf. in Prain, Fl. Trop. Africa 9 : 487, 1919. Hitch. McC. Hooker, Ic. 129, t. 83.

Milium cimicinum Lam. Mant. 184, 1771.

Axonopus cimicinus Beauv. Agrost. 12, 1812. FBI. 7 : 64.

A perennial, erect or decumbent grass. Culms and leaf margins clothed with long, horizontal cilia. Nodes somewhat swollen. Leaves ovate-lanceolate, acute, cilia bulbous-based. Racemes spike-like, 4-5, borne on the top of a slender, hairy peduncle. Spikelets solitary or clustered, 3-5 × 2 mm., ovate or elliptic, awned, erect. Upper involucral glume with long, purplish hairs on the marginal nerves. Floral glume of the upper floret with a short, stout awn.

Occurs sporadically in moist, stony ridges and fissures; collected from the area near Gurukul, Faridabad.

Flowers and Fruits : July-Sept.

J. K. Maheshwari 1244

32. Chloris Sw.

Empty glumes above the floret, solitary, well developed or rudimentary.

Empty glumes represented by a fine arista, spikes long, slender, awned . . . . *C. dolichostachya*

Empty glumes oblanceolate, truncate . . . . . *C. virgata*

Empty glumes above the floret 2 or 3 :

Spikelets 3 mm. long . . . . . *C. gayana*

Spikelets 2.5 mm. long . . . . . *C. barbata*

C. dolichostachya Lagasca, Gen. & Spec. Pl. 5, 18, 6. Bor. Grasses Ind. 466.

C. incompleta Roth, Nov. Pl. Sp. 60, 1821. FBI. 7 : 290.

A perennial grass with erect or procumbent stems up to 1 m. tall, often branched. Leaves linear. Inflorescence of generally 5, digitate, spreading spikes forming a terminal whorl. Spikelets awned, many, 5 × 1 mm., imbricate, 2-rowed, secund, lanceolate, closely appressed. Upper involucral glume produced into a very short awn. Lower floral glume with a median awn up to 9 mm. long, callus bearded, upper glume rudimentary.

Common on the Ridge as well as [illegible] wet and [illegible] places

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 777

C. virgata Sw. Fl. Ind. Occ. 1 : 203, 1797, FBI. 7 : 291; Acharyyar, S. Ind. Gr. 260, Blatt. & McC. Bomb. Gr. 255, t. 170.
Rhabdochloa virgata Beauv. Ag[illegible] 84, 18[illegible] 2.

An erect tufted leafy grass, also with creeping stems, rooting below. Stems somewhat flattened. Leaves narrow, linear. Spikes 6-15, erect, digitate, young ones enclosed in an inflated sheath. Spikelets 2-rowed, with 4 glumes. Upper involucral glume awned. Lower floral glume bifid at the apex, awned, long-ciliate on the margins in the upper half almost to the tip. Rachilla shortly produced bearing a well developed, hooked, awned glume. Caryopsis polished, oblongoid.

Common in fallow and cultivated fields and uncultivated places near gardens on dry soil.

Flowers and Fruits : June-Oct.
J. K. Maheshwari 1129

C. gayana Kunth, Rev. Gram. 1 : 89, 293, t. 58, 1829; Bor, F. As. 5 : 123; Blatt. & McC. Bomb. Gr. 258.

An erect or geniculately ascending, simple or branched annual or perennial, 60-120 cm. tall. Culms glabrous, smooth. Leaves near, long-tapering to a fine point. Spikes 6-15, 9-12 × 0.4 cm., umbellate, sessile, suberect, greenish or brownish. Spikelets 3.5-5 mm., shortly 2-awned. Involucral glumes very unequal. Lowest floret hermaphrodite, glume 2-toothed, ciliolate along the marginal nerves and shortly bearded below the tip or ciliolate, awned. Upper floret barren.

Occurs in waste places near gardens and along roadsides. Cultivated in the fields of I.A.R.I. for fodder.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1408

C. barbata (Linn.) Sw. Fl. Ind. Occ. 1 : 206, 1797, Aitchis. Cat. Punjab Pl. 167; Duthie, Gr. N.W. Ind. 33, FBI. 7 : 292, Acharyyar, op. cit. 264, Blatt. & McC. Bomb. Gr. 256, Bor, op. cit. 124.
Andropogon barbatus Linn. Mant. 302, 1771.

A tufted perennial grass, ascending from the geniculate creeping base, profusely branched. Leaves narrowly linear. Spikes 5-20, 4-8 × 0.5 cm., suberect, digitately arranged in a terminal fascicle. Spikelets sessile, 2.5 × 1.5 mm., 3-awned, rachilla produced bearing two, small, awned, barren glumes. Involucral glumes lanceolate. Lowest floret hermaphrodite; glume broad, ciliate, densely bearded on the margins above the middle, awned.

[illegible] on pasture ground and in [illegible] fields, especially on sandy soils.

[illegible]

33. Paspalum [illegible]

P. distichum [illegible] Fl. As. 3 : 455 & Grasses [illegible] perennial, rhizomatous grass. Stolons long forming loose mats. Culms erect or decumbent. [illegible] long, glabrous. Ra[illegible] [illegible] floral glume absent. Caryop[illegible] depressed-convex [illegible] on near the banks of Hindan River, Najafgarh Drain, Okhla [illegible] and near ponds and puddles.

Flowers and Fruits : June-Sept.
J. K. Maheshwari 306

34. **Digitaria** Heist. ex Fabr.

Spikelets bearded with soft, spreading hairs — *D. adscendens*
Spikelets not bearded — [illegible] *D. setigera*

D. adscendens (H.B. & K.) Hear. in Blumea 1 : 92, 1934. Bor in Webbia 11 : 350, 1955 & Grasses Ind. 298.

Panicum adscendens H.B. & K. Nov. Gen. & Sp. 1 : 97, 1815.

Digitaria fimbriata Link, Hort. Berol. 1 : 226, 1827.

D. marginata Link var. *fimbriata* (Link) Stapf in Prain, Fl. Trop. Africa 9 : 440, 1919.

D. sanguinalis (Link) Scop. var. *marginata* (Link) Fern. in Rhodora 22 : 103, 1920.

An erect or decumbent annual grass up to 100 cm tall. Leaves linear to lanceolate. Spikes 2 or more. Spikelets oblong, acute, appressed to the rachis, binate, pedicel of one row shorter than the other. Upper involucral glume ciliate. Floral glume densely bearded with soft, spreading hairs, hairs at first dull white, turning brownish later.

A common grass occurring throughout on all types of soils, dry or moist. It is easily recognizable by its conspicuously bearded spikelets.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 1143, canal near Najafgarh.

D. setigera Roth. ex Roem. & Schult. Syst. 2 : 474, 1817. Bor in Webbia 11 : 344, 1955 & Grasses Ind. 305.

D. corymbosa (Roxb.) Merr. Enum. 1 : 53, 1923.

Panicum corymbosum Roxb. Hort. Beng. 7. 1814, nom. nud.
Digitaria extensa Hook. f. Hegar. in Flora 1. 100. 1834.
Panicum extensum Nees & Arn. in Wt. Cat. n. 2340. 1833, nom. ill.

An annual tufted grass. Culms smooth, glabrous. Leaves linear to linear-lanceolate, up to 20 × 1.2 cm., rough. Racemes subdigitately arranged in a short common axis, rachis narrowly winged. Spikelets elliptic, 2-3 mm. long. Lower involucral glume a small hyaline scale or obsolete. Lower floret sterile, upper hermaphrodite, floral glume chartaceous.

Common in waste places near fields and along roadsides.

Local name : Kiwai
Flowers and Fruits : July-Oct.
J. K. Maheshwari 1060

35. Cynodon Rich. ex Pers. nom. cons.

C. dactylon (Linn.) Pers. Syn. 1 : 85. 1805. Duthie, Gr. N.W. Ind. 32, FBI. 7. 288. Blatt. & McC. Bomb. Gr. 250, t. 166. Bor. Gr. U.P. 110, t. 22 & Fl. As. 5 : 125.

Panicum dactylon Linn. Sp. Pl. 58, 1753.

A perennial grass with an extensively creeping base. Culms slender, many-noded, wiry, forming matted tufts. Leaves linear, acuminate, 3-10 × 0.2-0.4 cm. Spikes 4-5, digitate, arcuate-spreading, green or purplish. Spikelets laterally compressed, sessile, appressed, imbricate. Floral glumes boat-shaped.

Common and abundant, forming a carpet in lawns, extensively used as lawn grass. Used as cattle fodder.

Local name : Doob
Flowers and Fruits : Major part of the year
J. K. Maheshwari 516

36. Eleusine Gaertn.

Prostrate or creeping grasses, rooting at the nodes; spikes digitate . . . . . *E. compressa*
Erect grasses :
Spikes digitate . . . . . *E. indica*
Spikes scattered or whorled . . . . . *E. verticillata*

E. compressa (Forsk.) Ascners. & Schwfth. ex C. Christensen in Dansk. Bot. Archiv 4. No. 3, 12, 1922, Bor. Grasses Ind. 492.

Panicum compressum Forsk. Fl. Aegypt.-Arab. 18, 1775.

Eleusine flagellifera Nees in Linnaea 16. 220, 1842, FBI. 7 : 294.

A prostrate, long-spreading, proliferously branched perennial. Stems smooth, stiff, rooting at the distant, thickened, leafy nodes and putting

forth slender branches. Internodes 19-20 cm long. Leaves 2-4 × 0.2-0.3 cm., rigid. Spikes 3-6, digitate; rachis flexuous. Spikelets imbricate 4 to 6-flowered. Upper involucral glume ar s w e. Floral glumes ovate. Palea ob ong, keels ciliate.

Common in sandy s il near Jamuna River and on the R ge and adjacent rocky tracts near Faridabad Mehrauli where it spreads profusely in open dry places or amongst the thorny shrubs. The plant throws aerial runners in all directions and spreads very quickly. Asses seem to like it and hence its local name.

Local name : Gadaghas ; Chimbar
Flowers and Fruits : July-Oct.
J. K. Maheshwari 903

E. indica (Linn.) Gaertn. Fruct. 1 : 8. 1788. Aitchis. Cat Punjab Pl 168. Duthie op. cit 34. Blatt & McC. Bomb Gr 259. Bor Fl. As. 5 : 108 & Grasses Ind 493.

Cynosurus indicus Linn. Sp. Pl. 72. 1753.

An erect annual, 30-60 cm high simple or branched. Culms glabrous, somewhat compressed. Leaves distichous, flat or folded, sheaths ciliate. Spikes 2-7, elongate, digitate with 1 or 2 below the umbel, suberect or subrecurved; rachis flattened. Spikelets biserate, secund, pointing forward at an acute angle. 3 to 6-flowered. Grains oblong, obtusely trigonous.

Common along the edges of fields, on pastures and roadsides.

Flowers and Fruits : July-Oct.
J. K. Maheshwari 732, Najafgarh

E. verticillata Roxb. Fl Ind 1 : 346. 1820. Aitchis loc cit, Duthie, op. cit. 34, FBI 7 : 295.

An annual. Culms tufted erect, 30-60 cm high, simple or branched. Leaves linear, lanceolate about 20 × 1.5 cm or more, margins subdenticulate. Spikes 6-20 scattered or whorled, suberect, with numerous, close spikelets. Spikelets 6 to 12-flowered, 4-7 × 3 mm, shining. Empty glumes unequal, keels subdenticulate, upper one acuminate or aristulate. Grains oblong, rugose.

Common and sometimes abundant on the Ridge in depressions and shades of bushes and also in the plains in waste places, along roadsides and in cultivated fields on dry, sandy soil.

Local name : Makra
Flowers and Fruits : July-Oct
J. K. Maheshwari 248

37. Dactyloctenium Willd.

Annuals, spikes 1.3-3.8 cm long . . . . . *D. aegyptium*

Eleusine

Perennial, spikes 6-13 cm. long [illegible]

D. aegyptium (Linn.) Beauv. Agrost. 72, 1812, Blatt. & McC. Bomb. Gr. 262, t. 176; Bor. Gr. U.P. 112, t. 23, Fl. As. 5 : 110 & [illegible] Ind. 489.

Cynosurus aegyptius Linn. Sp. Pl. 72, 1753.

Eleusine aegyptia Desf. Fl. Atlant. I. 85, 1798 ; Duthie, Gr. N.W. Ind. 34, FBI. 7 : 295.

A [illegible] Culms rooting [illegible] near flat. Sheaths [illegible] crowded, [illegible] at right angles to the rachis. [illegible] Lower floral glumes [illegible] acute or awned. Grains obovoid-globose, rugose.

Common during the monsoon [illegible] Ridge [illegible] among bushes and shrubs and as a weed in cultivated fields and [illegible] places, often becoming abundant. Erect, prostrate and [illegible] types are known from the area.

Local name - Makra
Flowers and Fruits : May-Oct.
J. K. Maheshwari 4

D. sindicum Boiss. Diagn. Pl. Orient. (ser. 2) fasc. 4 : 31, 1859, Blatt. & McC. Bomb. Gr. 264; Bor, Grasses Ind. 489.

Eleusine sindica Duthie. Fodd. Gr. 58, 1888.

E. arrstata Ehrenb. ex Boiss. Fl. Orient. 5 : 557, 1884; FBI. 7 : 296.

A dwarf, slender, prostrate, perennial grass, prolifeously branched. Stems rooting at the distant, thickened, woody, leafy nodes. Leaves linear, ovate with bulbous-based hairs. Spikes 2-6, 6-13 mm. long. Floral glumes ovate, cuspidate, keeled. Grains ovoid, rugose.

Common in sandy places, forming a thick mat of plants matted with the soil.

Flowers and Fruits : July-Sept.
J. K. Maheshwari 325, near Okhla

38. Paspalidium Stapf

P. flavidum (Retz.) A. Camus in Lecomte, Fl. Gen. Indo-Chine 7 : 419, 1922; Blatt. & McC. Bomb. Gr. 141, t. 90; Bor, Gr. U.P. 179, t. 14, Fl. As. 5 : 258 & Grasses Ind. 343.

Panicum flavidum Retz. Obs. 4 : 15, 1786; FBI. 7 : 28.

A tufted annual, 30-75 cm. long. Culms geniculate, ascending or erect, branched. Leaves 5-25 × 0.5-2 cm., flat, ascending, linear-lanceolate. Inflorescence a panicle of 6-9, false, sessile, distant, erect spikes, appressed to the main axis, recurved. Spikelets closely imbricate, secund

[illegible] 301

[illegible] banks and [illegible]

[illegible] Fruits [illegible]

[illegible] Maheshwari 607 [illegible]

[illegible]

[illegible] and upper floral glume cuspidate [illegible]

Lower two ucral glume and upper floral glume cuspidate [illegible] than the former [illegible]

E. colonum (Linn.) Link, Hort. Berol. 2 209, 1833, Bor, Gr [illegible] Fl. As 5 . 246 & Grasses Ind. 308.

Panicum colonum Linn. Syst, 870, 1759 & Sp. Pl [illegible] 84 FBI 7 [illegible]

An annual [illegible] erect or geniculately ascending [illegible] hed grass [illegible] 8-20 [illegible] and often appressed to the axis, usually distant Spikelets crowded [illegible] globose [illegible] Grains plano-convex

Common along canal banks, near ponds and in cultivated fields also found on the Ridge in most sandy places

Local name : Dhelari
Flowers and Fruits : June-Oct
J. K Maheshwari 6

E. crusgalli (Linn.) Beauv Agrost 53 1812 Bor & McC Bomb Gr 150. t. 95 Bor, Fl. As, 5 247 & Grasses Ind, 310

Panicum crusgalli Linn Sp Pl 56, 1753 FBI 7 30 in part

An annual Culms [illegible] decumbent or shortly creeping below simple or branched Leaves [illegible] linear margins hardly cartilaginous ligule absent Panicles erect 5-12 cm long branches solitary or binate suberect or spreading distant except the upper ones or more or less lobed in appearance Spikelets crowded 3-3.8 mm [illegible] cuspidate or awned greenish or tinged with purple lower floret barren floral glume cuspidate or produced into a long flexuous awn Upper floret hard [illegible] polished Grains broadly [illegible]

Common in the fields of sugarcane and other rainy season crops grown at Nagalgaon and Tamarpur A summer weed along irrigation channels and canal banks. Used as cattle fodder

Local name : Sama ; Samak
Flowers and Fruits : July-Nov
J K Maheshwari 107 443 1054 1055

40. Oplismenus Beauv

A small, diffuse grass, awns barbellate, capillary . . . *O. burmannii*
A tufted branching grass, awns smooth, vascular [illegible] *O. compositus*

O. burmannii (Retz.) Beauv. Agrost. 54, 1812; FBI 7: 68, Bath. & McC. Bomb. Gr. 154, t. 97, Bor. Gr. U.P. 158, Fl. As. 5: 263 & Grasses Ind. 317.

Panicum burmannii Retz. Obs. 3: 10, 1783.

A prostrate or procumbent, slender annual, 15-45 cm. long. Leaves 2.5-[illegible] 0.6-1.5 cm., ovate or ovate-lanceolate, elliptic-oblong. Spikes several, close, in short panicles with distant, spicate branches. Spikelets [illegible] 2.5 mm. Involucral glumes and lower floral glume awned.

Common and abundant, forming a dense carpet of herbaceous undergrowth in moist, shady areas of gardens and other similar places along canal banks.

Flowers and Fruits : June-Dec.
J. K. Maheshwari 1045.

O. compositus (Linn.) Beauv. Agrost. 54, 1812; FBI 7: 66, Bath. & McC. Bomb. Gr. 152, t. 96, Bor. Gr. U.P. 157, t. 42, A. & F. As. 5: 262 & Grasses Ind. 317.

Panicum compositum Linn. Sp. Pl. 57, 1753.

A procumbent or suberect annual, rooting below, 30-120 cm. long. Leaves ovate to ovate-lanceolate, acuminate, 5-7.5 × 1-2.2 cm., flat. Spikelets distant, in panicles with distant branches, about 4 × 1.5 mm. Lower involucral glume awned.

Common and abundant along with *O. burmanni* Beauv. forming a dense herbaceous undergrowth in moist, shady places of the fruit orchards. The grass is attractive due to reddish or purplish-coloured stigmas.

Flowers and Fruits : Sept.-Jan.
J. K. Maheshwari 1044, near Jamuna Bridge.

41. Bothriochloa Kuntze

B. pertusa (Linn.) A. Camus in Ann. Soc. Linn. Lyon (n.s.) 76: 164, 1931; Bor. Fl. As. 5: 368 & Grasses Ind. 109.

Holcus pertusus Linn. Mant. 301, 1771.

Andropogon pertusus Willd. Sp. Pl. 4: 922, 1806.

Amphilophis pertusa Nash ex Stapf in Agric. News W. Ind. 15: 179, 1916; Blatt. & McC. Bomb. Gr. 84, t. 54.

A slender, erect or geniculately ascending perennial. Nodes bearded with spreading hairs. Leaves linear. Racemes subdigitately fasciculate, silky, whitish, pale or dull purplish, joints and pedicels densely ciliate. Sessile spikelets 3-4 × 1 mm., oblong-lanceolate, lower involucral glume with a deep pit above the middle, upper floral glume reduced to an awn. Pedicelled spikelets male or neuter, not awned.

A very variable grass [illegible] public and private lawns, pastures, stony crevices and on very dry soil.

Flowers and Fruits : July-Oct

J. K. Maheshwari 1056

42. Dichanthium Willem

D. annulatum (Forsk.) Stapf in Prain, Fl. Trop. Africa 9, 128, 917 (1918); Bor. & McC. Bomb. Gr. 94, t. 65; Bor. Gr. C. P. 446, t. 25; Fl. Ar. 5, 37; & Grasses Ind. 133.

Andropogon annulatus Forsk. Fl. Aegypt.-Arab. 173, 1775; FBI 7: 196.

An erect or ascending, densely tufted perennial grass, up to 1 m. tall. Nodes usually bearded. Leaves linear, setaceous-acuminate. Racemes 3 or often more, joints and pedicels silky-hairy. Sessile spikelets hermaphrodite, closely imbricate, 3-5 1 mm. upper floral glume reduced to a slender awn. Caryopsis plano-convex, obovate-oblong. Pedicellate spikelets male or neuter.

Very common throughout, especially on cut lawns and pastures in hedges and on roadsides. When grazed it puts forth prostrate shoots. It is often confused with *Bothriochloa pertusa* A. Camus but is easily recognized by the absence of the pit in the lower glume. Used as cattle fodder and horses seem to like it.

Local name : Zarga; Barlu; Apang

Flowers and Fruits : Cold and summer seasons

J. K. Maheshwari 743; 1066

43. Desmostachya Stapf

D. bipinnata (Linn.) Stapf in Dyer, Fl. Cap. 7, 632 (1900); Bor. & McC. Bomb. Gr. 244, t. 162; Stewart, Gr. N. W. Ind. 423; Bor. Grasses Ind. 491.

Briza bipinnata Linn. Syst. 875, 1759

Uniola bipinnata Linn. Sp. Pl. 104, 1762

Eragrostis cynosuroides Beauv. Agrost. 162, 1812; FBI 7, 324.

A perennial, tall grass, branching from the base. Culms 30-150 cm. high, tufted, smooth, erect. Leaves linear to linear-lanceolate, rigid, with filiform tips, up to 40 × 1 cm., margins hispid. Panicles 15-55 cm. long, narrowly pyramidal or columnar, reddish-brown or brown at maturity. Spikes many, short, up to 2.5 cm. long, crowded. Spikelets sessile, second, 2-seriate, deflexed.

Common and abundant in the Khadar tract, in fallow fields, unused ground, along roadsides and boundaries of fields, and on dry or little wet, sandy, yellowish-brown soils, often growing in dense tufts and

[illegible] Deuh in association with *Sporobolus* [illegible] *pulvinatus* Desv. [illegible]

Local name Dhab Dhab

Flowers and Fruits June-Oct

J. K. Maheshwari 151

44. Leptochloa Beauv.

L. panicea Retz. (Ohwi in Bot. Mag. Tokyo 55 : 311, 1941 Bor [illegible] 517

Poa panicea Retz. [illegible] 1783

Leptochloa filiformis Hook. f. in FBI. 7 : 298 [illegible] Gr. N.W. Ind. 192; FBI. 7 : 298

An annual, geniculately ascending, slender grass [illegible] high, glabrous, many from a common base. Leaves up to 25 [illegible] flat, finely acuminate. Panicles 10-20 cm. long, contracted or [illegible] branches very many, capillary. Spikes 3-10 × 0.[illegible] spreading. Spikelets very small 2 to 4 flowered.

Common in moist situations near canals and ponds

Flowers and Fruits : June-Sept

J. K. Maheshwari 887 1059

45. Urochloa Beauv.

U. panicoides Beauv. var. **pubescens** (Kunth) Bor, Grasses Ind. 377, 1960

Urochloa pubescens Kunth, Rév. Gram. 1 : 31, 1829

An annual, tufted grass, erect or geniculately ascending. Leaves linear to linear lanceolate, pale or yellowish-green, base wider, semi-amplexicaul. Inflorescence of 4-7, erect or spreading, spikes arm, second racemes. Spikelets 3-4 × 2 mm., ovate to elliptic oblong, very [illegible] pubescent. Involucral glumes dissimilar, lower one clasping at the base.

Common along canal banks and on pasture grounds

Flowers and Fruits : Aug.-Oct

J. K. Maheshwari 1249, near Najafgarh Drain

46. Brachiaria Grisch.

Spikelets densely crowded, 2.5-3 mm. long; sheath nodes usually one-haired; culms stout [illegible]

Spikelets loose or [illegible] crowded, less than 2.5 mm. [illegible] sheath nodes [illegible] pubescent; culms slender :

Spikelets 1.5-2.5 mm. long, rachis trigonous [illegible]

Spikelets 2.5-4 mm. long, rachis trigonous or flattened

Spikelets 5-many, turgid . . . . . *B. ramosa*

Spikelets 2-4, not turgid . . . . . *B. distachya*

B. mutica Forsk. [illegible] Bor. Fl. As. 5 272 Blat. & McC. [illegible]

Panicum muticum Forsk. F[illegible]

A stout branched perennial. Culms geniculate at the [illegible] compressed, striate, glabrous; nodes covered with [illegible] Leaves 15-25 × 1.2-1.6 cm., spreading [illegible] Panicles of 8 [illegible] spikes or racemes [illegible] spreading. Spikelets densely crowded [illegible] blackish-purple [illegible]

Grown as fodder grass in the fields of I.A.R.I., also [illegible]

English name : Para grass

J. K. Maheshwari 1413

B. reptans (Linn.) Gard. & C. E. Hubb. in Hook. Ic. Pl. [illegible] 1938, Bor. Fl. As. 5 276 & Grasses Ind. 285

Panicum reptans Linn. Syst. 870, 1759.

P. prostratum Lamk. Tabl. Encycl. 1 : 171, 1791

A creeping or rambling annual. Culms geniculate, ascending rooting at the nodes, branched with pubescent knotty nodes. Leaves lanceolate to ovate, amplexicaul, thin, 2.5-6 × 0.5-1.0 cm., margins [illegible] ened, whitish. Panicle of 5-9 racemes, first erect, later spreading. Spikelets pale, paired, crowded, 2 [illegible] mm., ovate-acute or elliptic, glabrous. Lower involucral glume nerveless, upper 7-nerved. Floral glume mucronulate, finely transverse wrinkled.

Common in cultivated and fallow fields and on unused ground.

Flowers and Fruits: July-Sept.

J. K. Maheshwari 1113

B. ramosa (Linn.) Stapf in Prain. Fl. Trop. Africa 9 542 [illegible], Blat. & McC. Bomb. Gr. 134, t. 86 Bor. Fl. As. 5 277 & Grasses Ind. 284

Panicum ramosum Linn. Mant. 29 1767 FBI 7 36 [illegible] par.

An annual with erect or ascending stems, branching from the base up to 60 cm. high. Leaves 5-12 × 0.5-1.3 cm., linear-lanceolate, from a round, often clasping base. Panicles 5-15 cm. long, subpyramidal; rachis terminating in a spikelet. Racemes 5-10 or more, straight or flexuous, erect or spreading. Spikelets alternate, 3 × 2 mm., ovoid, close or distant, often in pairs, one sessile and the other pedicellate, pubescent. Lower floret neuter, upper one hermaphrodite. Floral glume and palea transversely rugose. Caryopsis broad elliptic.

Common throughout the moist localities during and after rains. It is a good fodder grass.

Local name : Makraghas

Flowers and Fruits : June-Oct
J. K. Maheshwari 3

B. distachya Stapf in Prain, Fl. Trop. Africa 9 : 565, 1919 ; Bot. Fl. As 5 : 28 ; & Grasses Ind. 281
Panicum distachyum Linn. Mant. 183. 1771

A slender glabrous grass, [illegible] high, hairy at the nodes. Leaves erect or spreading, linear-lanceolate, rounded or amplexicaul at the base. Spikes [illegible] spreading. Spikelets [illegible] glabrous, solitary.

Met along the margins of fields.

47. Aristida Linn.

Involucral glumes not awned . . . . . *A. adscensionis*
Involucral glumes awned :
Spikelets 16 mm. long . . . . . *A. setacea*
Spikelets 30 mm. long . . . . . *A. hystrix*

A. adscensionis Linn. Sp. Pl. 82, 1753 ; FBI 7 : 224, Blatt. & McC. Bomb. Gr. 209. t. 138 ; Bor. Grasses Ind. 407

A slender, erect or ascending, simple or branched grass, 20-60 cm. high. Leaves narrowly linear, up to 30 × 0.3 cm. Inflorescence a lax, narrow, linear spike-like panicle, usually interrupted, branches erect or nodding, filiform. Spikelets 7-8 × 1 mm. long (excluding the awn), erect, green, the ripe ones turning purplish. Involucral glumes acute. Floral glumes laterally compressed, awn tripartite, central one longer than the laterals. Caryopsis as long as the glume.

Common and abundant on the Ridge in dry, gravelly soils and depressions and also in cultivated fields and near canal banks, forming dense tufts in local patches.

Local name : Lamp
Flowers and Fruits : July-Oct.
J. K. Maheshwari 1067

A. setacea Retz. Obs. 4 : 22. 1786 ; Duthie, Gr. N.W. Ind. 27, FBI 7 : 225 ; Bal. & McC. Bomb. Gr. 211. t. 139, Bor. Grasses Ind. 412

An erect or geniculately ascending, filiform grass, 60-90 cm. high. Stems smooth, polished. Leaves 15-30 × 0.2-0.4 cm., coriaceous, smooth. Panicles contracted, open or contracted, branches filiform or capillary, usually fasciculed and erect. Involucral glumes awned. Floral glumes 6-7 mm. long, awns 3, subequal or the middle one the longest, callus bearded with long hairs.

As common as *A. hystrix* Linn. f. on the Ridge in dry places.

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1265

A. hystrix Linn. f. Suppl. 113, 1781 (non Thunb.), Roxb. Fl. [illegible] 832, FBI 7 : 225, Bor, Grasses Ind. 430 [illegible]
Chaetaria hystrix Beauv. Agr. [illegible]

A [illegible] perennial with a [illegible] Leaves narrowly lanceolate-linear, very finely acuminate [illegible] effuse, rachis stout, flexuous. Spikelets (excluding a [illegible] straw-coloured or purplish.

A xerophytic grass. Common in the Raja [illegible] gravelly places, often forming dense, troublesome tufts for a [illegible]

Local name : Baluraghas
Flowers and Fruits : Aug.-April
J. K. Maheshwari 660 Hazaribagh.

48. Avena Linn.

A. sterilis Linn. var. **culta** ; Ramada in Ind. For. 80 : 36, 1954
A. sativa auct. (non Linn.)

An erect, polished annual, 120 cm. high [illegible] moderately [illegible] Leaves linear-lanceolate [illegible] Spikelets in large, lax terminal open panicle [illegible] from [illegible] side 25-33 × 4-5 mm., usually 2 to 3-flowered, top of rachilla like a [illegible] 'sucker-mouth' shape. Florets all bisexual, one awned at the base and one or two awnless florets above or with all the florets awned [illegible] veins glumes strongly several nerved, the lower becoming white as the grain ripens. Grains lightly enclosed by the floral glumes and [illegible] free, silky.

Cultivated during the cold season for fodder in Tinnarpur and other parts as a pure or mixed crop.

In most of the Indian floras the commonly cultivated species of oats grown in India is erroneously called *Avena sativa* Linn. which is cultivated in the temperate climates of Northern Europe. Bose 1929 has pointed out that the species cultivated in India is identical with the species *A. byzantina* C. Koch grown in the Mediterranean Region and later introduced and cultivated in many parts of the world. This species now bears the correct name of *A. sterilis* Linn. var. *culta*.

Local name : Jai.
Flowers and Fruits : Jan.-March
J. K. Maheshwari 600

49. Sorghum Moench nom. cons. prop.

Panicles usually open; rachis of spikes fragile species wild . . . . . *S. halepense*

Panicles usually close and dense, rachis of spikes tenacious species cultivated . . . . . *S. vulgare*

S. halepense (L.) Pers. Syn. [illegible] 101, 1805. Duthie, Gr. N.W. Ind. 23; Blatt. & McC. Bomb. Gr. 55. [illegible] Bot. [illegible] 1 P. 200 [illegible] 60 & Grasses Ind. 222.

Holcus halepensis Linn. Sp. Pl. 1047, 1753.

Andropogon halepensis Brot. Fl. Lus. 1 : 89. 1804; FBI. 7 : 183.

A perennial [illegible] grass [illegible] leaves linear-lanceolate. Inflorescence [illegible] panicle [illegible] brown and purplish in colour. [illegible] branches [illegible] Spikelets borne at the tips of the branches and branchlets, green or purplish, brown and polished at maturity. [illegible] Sessile spikelets hermaphrodite, pedicellate ones male or neuter.

Cultivated as a weed in cultivated and fallow fields, also found in hedges and along banks of canals. Used as fodder.

Local name : Baru
Flowers and Fruits : Sept.-Nov.
J. K. Maheshwari 74.

5. vulgare Pers. Syn. 1 : 101. 1805; Blatt. & McC. Bomb. Gr. 58.

Andropogon sorghum Brot. Fl. Lus. 1 : 88. 1804; FBI. 7 : 183.

Holcus sorghum Linn. Sp. Pl. 1047, 1753.

A tall, stout annual grass. Leaves broad, linear. Panicles dense, thyrsiform, decompound, with crowded whorls of erect branches and branchlets. Spikelets large, broad, hairy; pedicellate ones usually neuter.

Cultivated as a food crop in the urban parts.

Local name : Jawar
Flowers and Fruits : Sept.-Oct.
J. K. Maheshwari 11.

50. Chrysopogon Trin. nom. cons.

Plants small, 30-60 cm. high, spikelets acicular, callus of sessile ones as long as the spikelets . . . . . *C. aciculatus*

Plants stouter, over 90 cm. high, callus not nearly as long as the spikelet . . . . . *C. fulvus*

C. aciculatus (Retz.) Trin. Fund. Agrost. 188. 1820; Duthie, Gr. N.W. Ind. 22 (*Acicularia*); Hor. Fl. As. 5. 1867; Blatt. & McC. Bomb. Gr. 68.

Andropogon aciculatus Retz. Obs. 5 : 22. 1788; FBI. 7 : 188.

An erect or ascending perennial grass with a woody, creeping rhizome, lower internodes very short, the upper elongate. Leaves densely tufted, linear, margins scabrous. Panicles erect, pale green or purplish, narrow, branches fragile, 1 form, spreading. Spikelets in threes, awned, one sessile, hermaphrodite, 3-4 × 1 mm., the two lateral male or neuter, pedicellate, 4-5 × 1 mm., peduncle hairy and fulvously bearded at the top. Caryopsis linear.

Occurs in waste places and pastures. [illegible]
small awns which stick to the clothes [illegible]

Flowers and Fruits : Aug.-Oct.
J. K. Maheshwari 1227 (Dissers by Chopra)

C. fulvus (Spreng.) Chiov., Fl. Somala [illegible]
Pollinia fulva Spreng. Pugill. 2 : 10 [illegible]
Andropogon [illegible] Schult. Mant. 3 : 565 [illegible]

A tufted densely tufted perennial grass [illegible] often very slender straw coloured [illegible] scabrid. Panicles open, ovate or cylindrical [illegible] capillary, whorled spreading tip oblique brown-bearded and [illegible] racemes of a single sessile hermaphrodite and two pedicelled male spikelets. Spikelets nodding 4-7 × 2 mm. Sessile spikelet [illegible] compressed lower [illegible] glume 2-toothed [illegible] produced into two small unequal awns upper glume awned [illegible] Pedicelled spikelets dorsally compressed [illegible] than half the length of the sessile spikelet.

A characteristic drought-resistant grass of the Konkan [illegible] Common on the Ridge and adjacent hilly tracts in gravelly [illegible] amongst stone fissures and on steep slopes in crevices, often growing amongst the bushes of *Adhatoda vasica* Nees. It grows well in light soils and is relished by cattle.

Local name : Zarga, Dhawnlu
Flowers and Fruits : During and after rain
J. K. Maheshwari 258

51. Polypogon Desf.

P. monspeliensis (Linn.) Desf. Fl. Atlant. 1 : 67, 1798, Duthie, Gr. N.W. Ind. 30, FBI. 7 : 245, Blatt. & McC. Bomb. Gr. 207, Bor. Grasses Ind. 403

Alopecurus monspeliensis Linn. Sp. Pl. 61, 1753

An annual, tufted grass, stout or slender from a geniculate base, glabrous. Leaves ovate-lanceolate, 3-6 × 0.6 cm., scabrid, sheaths often swollen. Panicles spike-like, dense, cylindric, somewhat light green, obtuse, silky. Spikelets minutely pubescent, very shortly pedicelled, about 2 × 1 mm. Involucral glumes subequal, ciliate, awned. Floral glume broadly ovate-truncate, awned. Palea oblong, tip notched. Ovary ovoid.

Common during winter and early summer in sandy or silty beds of Jamuna River and its banks, in garden lawns, garden beds and cultivated fields. Also found on the Ridge in sandy soils.

Flowers and Fruits : Jan.-June
J. K. Maheshwari 1039

52. **Tophochloa** Reichb.

T. phleoides (Vill.) Reichb. Fl. Ger. Exc. 42. 1830. Bor. Grasses Ind. 4.5.

Festuca phleoides Vill. Fl. Delph. 2. 1. 1785.

Koeleria phleoides Pers. Syn. 1. 97. 1805. FBI. 7. 309.

An erect or ascending annual grass 30-60 cm. tall. Leaves [illegible] flat, glabrous or hairy, acuminate. Panicles 10-15 [illegible] contracted or lobulate. Spikelets 3- or 2-flowered, about 1.5 [illegible] floral glumes 2 bid, shortly awned in the sinus.

Common in the University lawns and near edges of garden beds, grow [illegible] with *Polypogon monspeliensis* Desf.

Flowers and Fruits : Feb.-April

J. K. Maheshwari 935 ; 1387

53. **Vetiveria** Lem.-Lasanc.

V. zizanioides (Linn.) Nash in Small. Fl. S.E. U.S. 67. 1903. Blatt. & McC. Bomb. Gr. 65, t. 40. Bor. Gr. U.P. 216. t. 64. Fl. As. 5. 355 & Grasses Ind. 258.

Phalaris zizanioides Linn. Mant. 183. 1771.

Andropogon squarrosus Hook. f. in FBI. 7. 186. 1896 (non Linn. f.).

A densely tufted, perennial grass. Rootstocks with spongy aromatic roots. Culms stout, up to 150 cm. tall, usually sheathed along. Leaves erect, rigid. Panicles oblong, usually contracted, whorls of branches [illegible] with up to 20 rays. Racemes slender. Sessile spikelets 4-5 x 1.5 mm., linear or lanceolate, yellowish, later turning to violet-brown, purplish or black. Involucral glumes muriculate on the back. Pedicelled spikelets with the lower involucral glume tubercled on the back and upper tubercled on the keel.

Occurs along the banks of Okhla and Najafgarh Canals and other tributaries of Jamuna River. Often cultivated for its fragrant roots that yield an aromatic and medicinal 'oil of vetiver'. The well known 'Khas-khas' mats, handfans and temporary house-roofs are made from it.

Local name : Gandar; Jhaund

Flowers and Fruits : July-Nov.

J. K. Maheshwari 292

54. **Oryza** Linn.

O. sativa Linn. Sp. Pl. 333. 1753. Duthie, Gr. N.W. Ind. 12. t. Bl. 7. 92. Blatt. & McC. Bomb. Gr. 274. t. 187. Bor. Fl. As. 5. 170 & Grasses Ind. 605.

An annual grass up to 1.5 m. tall or more. Leaves linear-acuminate, 50-60 x 0.6-0.8 cm., striate, [illegible]. Inflorescence a lax, erect panicle,

finally nodding. Spikelets 7-10 × 3 mm [illegible] awned or not. Floral [illegible] Caryopsis oblong [illegible]

Local name: [illegible]

Flowers and Fruits: Sept.-Nov.

J. K. Maheshwari 448

55. Eriochloa H. B. & K.

E. procera (Retz.) C. E. Hubb. in Kew Bull. 256, 1930; Raizada in For. 80 : 40, 1954

Agrostis procera Retz. Obs. 4 : 19, 1786

Eriochloa polystachya Hook. f. in FBI. 7 : 30, 1896 (non H. B. & K.); Bor. Grasses Ind. 312

An erect, tufted, leafy grass, 30-150 cm. tall. Roots fibrous. Culms glabrous, swollen and pubescent at the nodes. Leaves [illegible] late. Panicles erect, of several alternate subterminal spikes. Spikelets erect, [illegible] distichous, shortly pedicellate, 2.5-3.5 × [illegible] ovate-lanceolate, velvety, fading ochre from the pedicels. Lower [illegible] glume absent, upper silky hairy. Caryopses oblong, smooth.

Common in moist or wet places near canals, ponds and ditches.

Flowers and Fruits: Oct.-Dec.

J. K. Maheshwari 885, Azadpur.

56. Sporobolus R. Br.

Involucral glumes both shorter than the floral glume, branches of the panicle solitary or fascicled . . . . . *S. diandrus*

Lower involucral glume shorter than the upper and floral glumes:

Panicles contracted, spike-like . . . . . *S. tremulus*

Panicles open, effuse:

Annuals; spikelets ovate-lanceolate, acuminate . . . *S. coromandelianus*

Perennials from a woody base, spikelets oblong . . . *S. marginatus*

S. diandrus (Retz.) Beauv. Agrost. 26, 18, 71; Aitchis. Cat. Punjab Pl. 165; Duthie, Gr. N.W. Ind. 29; FBI. 7 : 247; Blatt. & McC. Bomb. Gr. 221, t. 48; Bor. Gr. U. P. 202; Fl. As. 5 : 117; & Grasses Ind. t. 29.

Agrostis diandra Retz. Obs. 5 : 19, 1788

An erect, slender, tufted annual. Nodes glabrous. Leaves flat or convolute, smooth, strongly nerved. Panicles narrowly pyramidal, turning purplish brown and finally brown; branches capillary, erect or spreading, in scattered fascicles or racemed. Spikelets small, 1.5-2.0 × 0.5

[illegible] shortly pedicelled. Grains [illegible]

[illegible] Ridge [illegible] and amongst the shades of shrubs or in depressions and also on moist pasture grounds [illegible] on unused places. Used as fodder for horses.

Local name: [illegible]
Flowers and Fruits: [illegible]
K. Maheshwari 254; Ridge 186; Hadi [illegible]

S. tremulus (Willd.) Kunth, Rev. Gram. 1: 67, 1829 & Enum. 1: [illegible] Suppl. 166; FBI 7: 250; Bor. Grasses Ind. 633.

Agrostis tremula Willd. Sp. Pl. 1: 372, 1797 (excl. syn.).

Sporobolus geniculatus Nees ex Arn. in Cat. Pl. Wall. [illegible]

An erect, prostrate or ascending tufted annual grass. Stems [illegible] Leaves short, rigid, narrow, linear. Panicle [illegible] spike-form, interrupted with erect branches. Spikelets [illegible] very shortly pedicelled, glabrous. Glumes [illegible] erect. Grain [illegible]

Common in moist, sandy soils and along grassy banks of ponds.

Local name: *Kozipatti*
Flowers and Fruits: Aug.–Oct., March
J. K. Maheshwari 728

S. coromandelianus (Retz.) Kunth, Rev. Gram. 1: 68, 1829; Bor. Grasses Ind. 627.

Agrostis coromandeliana Retz. Obs. 4: 19, 1786.

A densely tufted annual. Stems 10-30 cm. long, erect, ascending or prostrate, capillary, early below. Leaves linear-lanceolate, with tubercle-based hairs towards the base. Panicles pyramidal, erect, branches capillary, horizontally spreading, in whorls of 3-6, branchlets very close, appressed. Spikelets small. Grains compressed, smooth.

Common in all types of soils during the monsoon months.

Flowers and Fruits: July-Oct.

S. marginatus Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 397, 1851; Bor. Grasses Ind. 632.

An erect, perennial grass with a woody base. Flowering branches short or slender, 5-60 cm. high. Leaves narrowed from the rounded base to the tip, flat, minutely ciliate-serrulate. Panicles pyramidal, open, effuse, branches whorled, horizontally ascending, nodding, capillary. Spikelets minute, about 2 × 1 mm., spindle-shaped, somewhat flexuous, 1-flowered, crowded and subsessile at the ends of branches. Lower involucral glume much shorter than the upper, nerveless. Floral glumes ovate, 5-nerved. Paleas hyaline, often splitting from the middle axis.

A common grass of dry habitats along roadsides and *usar* or saline

sands; often found in association with the [illegible] *fruticosa* Forsk. and *Salsola baryosma* Dandy.

Flowers and Fruits - May-Oct.

J. K. Maheshwari 1320.

57. Arundinella Radd.

A. benghalensis (Spreng.) Druce in Rep. Bot. Exch. Club Br. Isles 645, 1917, Bor. Fl. As. 5. 85 & Grasses Ind. 421.

Panicum benghalense Spreng. Syst. 1. 311. 1824.

Arundinella wallichii Nees ex Steud. Syn. Pl. Glum. 114, 1844.

An erect, stout grass up to 1 m. tall. Culms smooth, glabrous. Leaves lanceolate. Inflorescence an erect, elongate panicle up to 20 cm. long; branches stout, spiciform. Spikelets 3 to 4 seriate, overlapping, secund, densely imbricate, setose, shortly pedicelled, dark purple. Involucral glumes unequal. Lower floral glume oblong, palea staminate, upper one hermaphrodite, narrowed into a short awn.

Rare. Grows in tufts in waste places.

Flowers and Fruits. July-Oct.

J. K. Maheshwari 324.

58. Panicum Linn.

Upper floral glume finely transversely rugose — *P. maximum*

Upper floral glume quite smooth -

Lower involucral glumes cuspidate-acuminate — *P. trypheron*

Lower involucral glume not cuspidate-acuminate

Spikelets long, narrowly lanceolate, acuminate; leaves broad — *P. paludosum*

Spikelets oblong, ovate-oblong to elliptic or ovoid, acute or obtuse

Annual, erect, leafy grasses, spikelets solitary or in pairs — *P. miliare*

Perennials, spikelets laxly clustered on the branches — *P. antidotale*

P. maximum Jacq. Coll. 1. 76, 1786 & Ic. 1. t. 13, Aitchis. op. cit. 159, FBI. 7. 49, Bor. Fl. As. 5. 224 & Grasses Ind. 327, Blatt. & McC. Bomb. Gr. 161, t. 103.

A perennial, densely tufted grass. Culms erect, usually stout, simple or branched. Leaves glabrous, softly hairy or coarse-hirsute with tubercle-based hairs, linear to linear-lanceolate; margins scaberulous to spinulously scabrid. Panicles erect or nodding, contracted or open, decompound, lower branches whorled, suberect or spreading; pedicels capillary, flexuous. Spikelets 3-4 × 1.5-2 mm., oblong. Lower floret male; upper hermaphrodite.

Introduced from Africa. Cultivated in the fields of I.A.R.I.

Flowers and Fruits : Nov.-April
J. K. Maheshwari 1405

P. trypheron Schult. Mant. 2 : 244. 1824; FB. 7 : 47; Blatt. & McC. Bomb. Gr. 158; Bor, Grasses Ind. 331.

An erect or geniculate, tufted annual, 30-90 cm. high. Leaves flat, thin, near. Panicles 10-30 cm. long, effuse, erect or nodding; rachis slender, hairy, scaberulous. Spikelets distant, 2.5-3 × 1.5 mm., ovoid, glabrous, acuminate, green or purple; involucral glumes unequal, ovate. Lower floret barren, glume broad ovate; upper one hermaphrodite.

Common on cultivated lands, borders of cultivated fields, pasture lands and in marshes.

Flowers and Fruits : Dec.-Feb.
J. K. Maheshwari 1116, Shahdara.

P. paludosum Roxb. Hort. Beng. 8. 1814, nom. nud. & Fl. Ind. 1 : 310. 1820; Blatt. & McC. Bomb. Gr. 162; Bor, Gr. U.P. 166, Fl. As. 5 : 229; & Grasses Ind. 329.

P. proliferum Hook. f. in FBI. 7 : 50. 1896 (non Lamk.)

A perennial, simple or branched, leafy grass, ascending from a creeping or spongy rootstock. Leaves linear or ensiform, flat, glabrous, 15-30 × 0.6-1.5 cm., many-nerved. Panicles at first contracted, then spreading, branches fasciculate below. Spikelets almost parallel to the axis, solitary or in pairs, 3-4 mm. long, ovate-lanceolate. Lower involucral glume one-fourth the length of the upper.

Grows in marshy places and along banks of rivers, canals and tanks.

Flowers and Fruits : June-Oct.

P. miliare Lamk. Tabl. Encycl. 1 : 173. 1791; Aitchis. op. cit. 159; Duthie, Gr. N.W. Ind. 5; FBI. 7 : 46; Bor, Fl. As. 5 : 232; Blatt. & McC. Bomb. Gr. 160, t. 101.

An annual grass. Culms 30-100 cm. high, erect or geniculate at the base, simple or branched, glabrous, leafy. Leaves linear, 15-60 × 1.2-2.5 cm., flat, flaccid. Panicles very compound, contracted or thyrsiform, erect or nodding. Spikelets solitary or in pairs, 2-3.5 mm. long, ovoid or ovato-acute. Involucral glumes unequal. Lower floret neuter, upper one hermaphrodite.

Cultivated in the fields of I.A.R.I., also naturalized.

P. antidotale Retz. Obs. 4 : 17. 1786; Duthie, op. cit. 2; FBI. 7 : 52; Blatt. & McC. Bomb. Gr. 163, t. 104; Bor, Grasses Ind. 322.

A tall, glabrous, perennial grass reaching 150 cm. high. Culms solid, woody, terete, smooth, nodes thickened. Leaves 15-60 × 0.6-2 cm., linear,

Panicles diffuse, pyramidal, branches usually [illegible] drooping, branchlets capillary. Spikelets lanceolate, about 3 × 1.5 mm., ovoid, acute. Glumes [illegible] very plumose.

Cultivated in the fields of I A R I

Local name : Banal ; English name Blue Panicum
Flowers and Fruits : June-Oct.

59. Halopyrum Stapf

H. mucronatum (Linn.) Stapf in Hook. Ic. Pl. t. 2448 896, FBI 7 : 338 Bor, Grasses Ind. 5 6

Lymala mucronata L. or Sp. Pl. 104 1762

A tall, stout, perennial grass. Culms hard, smooth, woody. Leaves 20-30 × 3-4 cm. flat or convolute very narrow, glaucous. Panicles 30-40 cm. long, erect or nodding, rachis and branches angular, [illegible] Spikelets 13-16 mm. long, flat, smooth, white or pale yellowish, each [illegible] silky hairy. Glumes closely distichously imbricate, keeled.

Grown in the hedges of gardens as an ornamental grass

Flowers : May-June
J. K. Maheshwari, passim in gardens

60. Poa Linn.

P. annua Linn. Sp. Pl. 68, 1753, FBI 7 345; Bor, Fl. As. 5 68 Stewart, Gr. N.W. Ind. 419.

A tufted, glabrous, prostrate or suberect grass. Leaves linear, flat, flaccid, margins scaberulous. Panicles ovate or lax, up to 8 cm. long, smooth, branches filiform. Spikelets 4-6 × 2 mm. oblong, ovate or lower lanceolate, usually green, 3 to 7-flowered. Involucral glumes unequal. Floral glumes oblong, silkily ciliate below along the keel and the outer side nerves. Palea with ciliate keels. Caryopsis oblong.

Common and abundant in the lawns, gardens, parks and bungalow compounds, especially in cool, shady places near hedges and canals. It forms a bright green, handsome turf on the ground, by its dense growth, but soon withers in the summer heat.

Flowers and Fruits : Dec.-March
J. K. Maheshwari 593

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